

# Manufacturers Record

Industry Construction

Reg. U. S. Pat. Office



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Single Copy, 20 Cents

Baltimore, Md.  
JANUARY 8, 1931

## The Story of Road Building

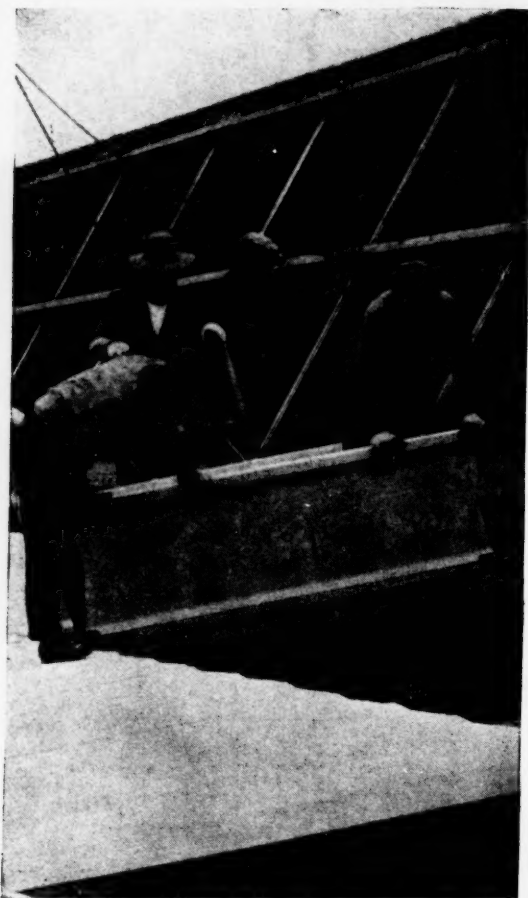
The South's highway improvement program in 1931 will aggregate \$600,000,000. Of this total \$300,000,000 will be expended on state highway systems alone, illustrating the large part the good roads movement plays in Southern construction activity. We are devoting this issue chiefly to a review of highway work of 1930, with special reference to Southern road building and programs for 1931. Road-building officials, manufacturers of equipment and materials, highway engineers and others prominent in motor transportation have contributed leading articles on highway problems, the use of highways, and their development. Some of the subjects covered include:

- Road-Building Activity in the South
- Status of the Highway Industry
- Gasoline Tax Diversion Endangers Road Progress
- The Service Value of a Road
- Transportation Service
- Low Cost Highways
- Speed With Safety

Road-building and maintenance is perhaps the largest business in the United States today. It is important to note that most of the states of the South plan to let highway construction contracts early in the year, in order that benefit may be derived as soon as possible from this stimulus to business activity and employment.

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ANNUAL HIGHWAY REVIEW NUMBER



# THIS ROOF GOES ON FOREVER!

*Haydite . . . . Trapped Air Cells  
10 pounds per square foot . . . .*

## *Featherweight Concrete* **INSULATING ROOF SLABS**

Would you wish to replace the walls of a building periodically? Then why replace the roof—a roof should *surely* be as structurally sound as the walls.

Modern roofs are of concrete. Precast of Haydite aggregate (trapped air cells), they are more economical, weigh less, and provide new insulating value.

Known as Featherweight concrete, these slabs, weighing as low as 10 lbs. per sq. ft., afford permanent, fireproof, no-maintenance roof service on the country's most prominent public and industrial, utility and railroad buildings. No painting is required.

Interesting and helpful "Catalog and Roof Standards" on request.

*Featherweight concrete slabs are also available with  
nailing surface for fastening ornamental covering.*

*Made, Laid and Guaranteed by*

# **FEDERAL-AMERICAN CEMENT TILE CO.**

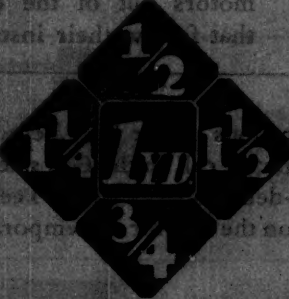
Executive Offices: 608 South Dearborn Street . . . . . Chicago  
Plants Near CHICAGO . NEW YORK . PITTSBURGH . BIRMINGHAM  
FOR OVER A QUARTER CENTURY



53%



Highly recommended  
to the extent as to the  
of electrical equipment  
G-E sales and service  
you how to pay for  
power factor, synchronous  
motors and of the economy  
that their installation



**NORTHWEST  
ENGINEERING  
COMPANY**

*The world's largest exclusive builders of  
gasoline, oil burning and electric powered  
shovels, cranes and draglines*

1733 Steger Building  
28 East Jackson Boulevard  
Chicago, Illinois, U. S. A.

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| 381 Whitehall St.,<br>Atlanta, Ga.  | 1325 Markham Ave.,<br>St. Louis, Mo. |
| 393 N. Main St.,<br>Memphis, Tenn.  | 1100 Milby St.,<br>Houston, Texas    |
| 1221 S. Lamar St.,<br>Dallas, Texas | 316 Howard Ave.,<br>New Orleans, La. |

MR-3 Gray

of the purchasers of  
the first one hundred  
**NORTHWESTS** have  
signified their satis-  
faction by buying a  
second, third, fourth  
... even a twelfth  
machine

**W**AS there ever a greater assur-  
ance of the kind of service you  
want than this?

Look into the money-making features  
responsible for this great endorsement!

**NORTHWEST**

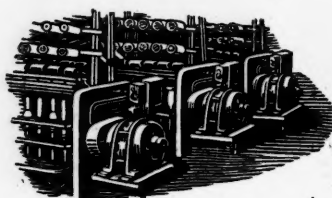
Keep thy Shop and  
[ The Sayings of



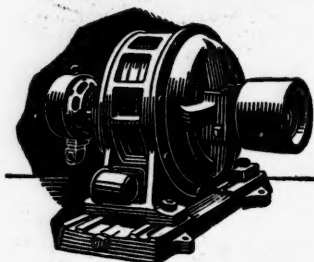
thy Shop will keep thee  
Poor Richard ]

Just Published  
for 1931  
AN  
**Almanack**

containing wise, thought-provoking suggestions for modernizing industrial plants and published in the firm belief that a penny spent on modernization to-day will be worth ten pennies spent to-morrow.



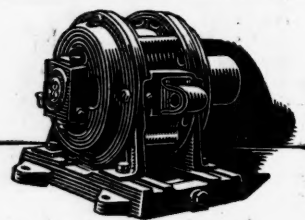
A certain group drive required 164 large bearings and 3600 feet of heavy belting. It was replaced by G-E individual direct-motor drive with 20 small bearings. Maintenance dropped from 65 cents to 12 cents per ton of product.



High power-factor is as beneficial to the plant as to the vendor of electricity. In many cases, the G-E sales engineer can show you how to pay for "leading-power-factor" synchronous motors out of the economies that follow their installation.



Instead of saying, "I can't use a synchronous motor here because I don't want it to stop at every voltage disturbance," call in the G-E sales engineer and ask him to show you the G-E time-delay devices which keep not only these motors, but all induction motors, on the line for all temporary voltage dips.

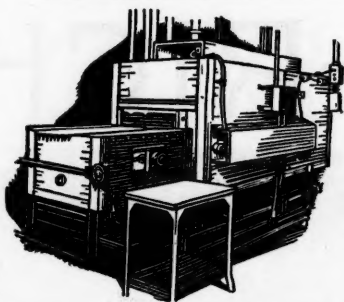


If power conditions in your plant will stand full-voltage starting, there are a number of G-E motors now available for this service that will greatly simplify your control equipment.

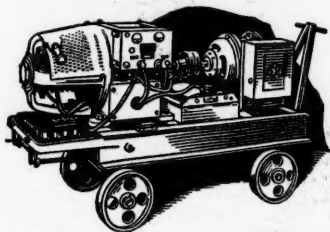


Continued bearing trouble was traced to an uninstructed night man who slapped off the belts by mishandling the starter and kept tightening them up to make them stay on. A G-E magnetic starter would have saved six months of trouble.

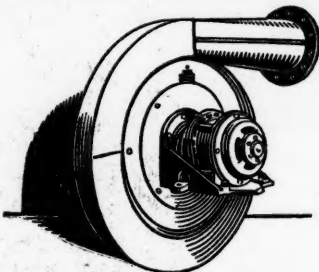




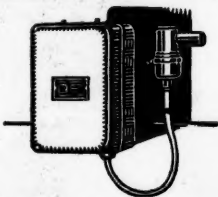
A New England manufacturing plant modernized its heat-treating department, at the suggestion of a visiting G-E heating specialist, by replacing four old fuel-fired, batch-type furnaces with a G-E automatic electric conveyor furnace. Handling costs dropped 60 per cent; production was tripled; the products were much improved; and the former high maintenance costs dropped out of the picture.



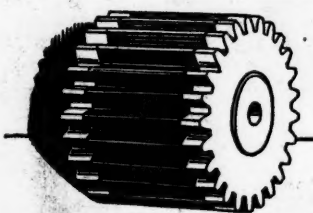
Hundreds of plants are getting "out of the red" and scores of little plants are growing big because they called in the G-E arc-welding specialist to help them modernize their products with arc welding—the greatest of modernization tools. It's almost impossible to strike an arc without improving design or cheating the scrap heap with a neat repair.



No better time to replace those old, inefficient blowers in the forge shop with modern G-E blowers that speed up production by maintaining uniform pressure on each furnace and reduce power costs because they are so efficient. Also, the operation of your cupolas can be greatly improved, and a substantial saving in coke effected, by installing a G-E cupola blower with automatic blast-gate control.



Give your plant engineer some G-E Thyatron or photoelectric tube equipments to play with and you'll be surprised at the number of places where he can use them to speed production, simplify control, and cut costs.



After you've replaced a stripped pinion on a motor shaft a few times, ask the G-E sales engineer to send you a Fabroil or a Textolite pinion. They outlive most other pinions by wide, wide margins. They practically eliminate noise, too.

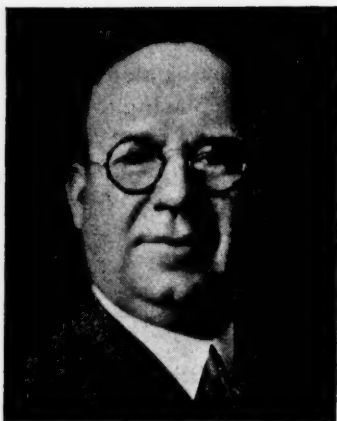
### *Modernization Reduces Costs — Increases Profit*

There are any number of ways in which the G-E sales engineer can help you to modernize. Ask him about them when he calls; or write the nearest G-E office.

GENERAL  ELECTRIC

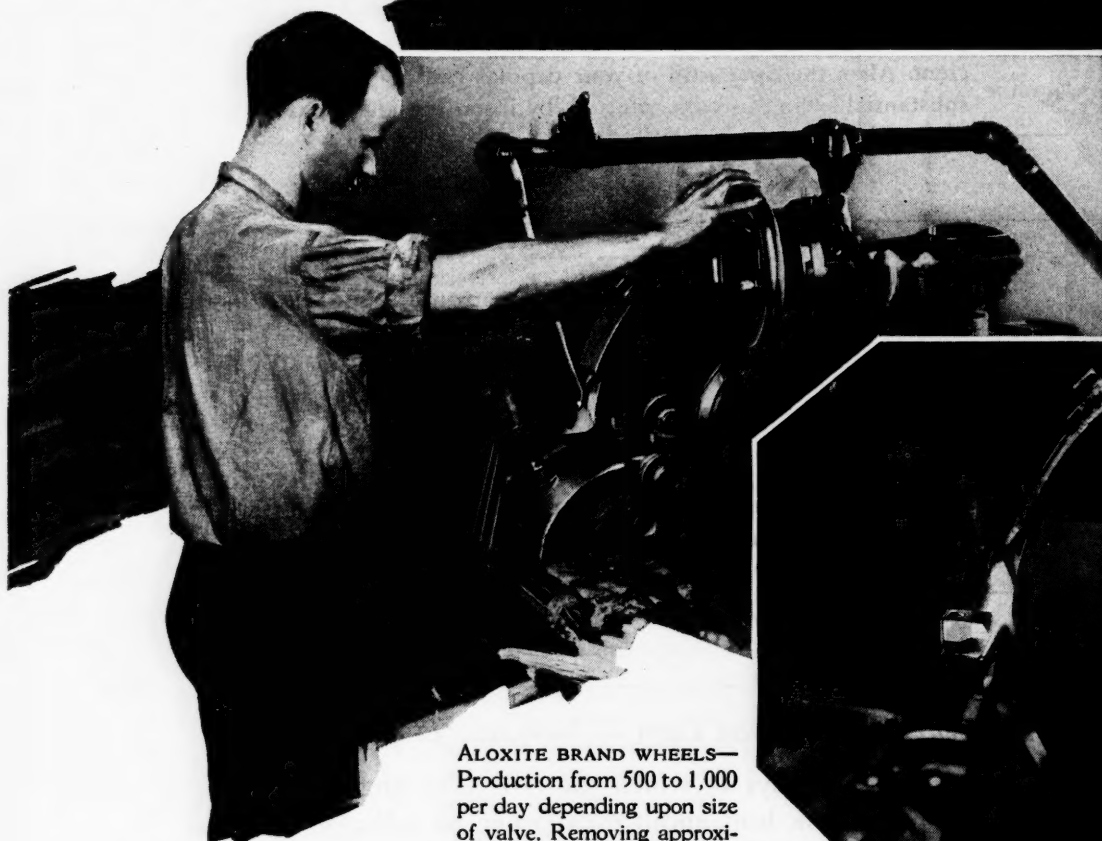
200-426

# Great Plants where WILCOX-RICH



"THE increased efficiency of abrasive wheels, as well as their more extended use in the manufacture of our products, is effecting a considerable reduction in cost which is a part of our contribution to the Automotive Industry."

J. B. HILL  
FACTORY MANAGER



ALOXITE BRAND WHEELS—  
Production from 500 to 1,000  
per day depending upon size  
of valve. Removing approxi-  
mately .020" to .025" in rough-  
ing—.003" in finishing.



The Carborundum Company,  
REG. U. S. PAT. OFF.

CANADIAN CARBORUNDUM

Sales Offices and Warehouses in New York, Chicago, Boston, Philadelphia,

The Carborundum Co., Ltd., Manchester, England

CARBORUNDUM AND ALOXITE ARE REGISTERED  
TRADE MARKS OF THE CARBORUNDUM COMPANY




# CARBORUNDUM *Serves* CORPORATION

**S**ERVING a plant that turns out 150,000 valves a day—an organization that is one of the largest producers of valves in the world and a company whose name and reputation are written large in the history of the motor industry—that is distinction indeed.

The combining of the resources and the research of three companies, The Rich Steel Products Co., The Rich Tool Co., and the Wilcox Products Corporation—has resulted in the present great industry, the Wilcox-Rich Corporation, producers of "Rich" valves for a great percentage of today's motors.

In their Battle Creek and Marshall, Michigan Plants, Aloxite Brand Grinding Wheels are among their valued production tools. On Cincinnati Centerless and Landis machines they are extensively used in the accurate grinding of "Rich" valve stems made of Silcrome.

Here again is an instance of the unquestioned ability of these wheels to combine speed, accuracy, finish and production. Here again is an instance of a great plant in which Carborundum Brand Products and grinding wheel service mean much.



ALOXITE BRAND WHEELS on Cincinnati Centerless Grinders—Production 800 to 1,000 valves per hour. Removing approximately .010" in roughing—.002" in finishing.

## Niagara Falls, New York

CO., LTD., NIAGARA FALLS, ONT.

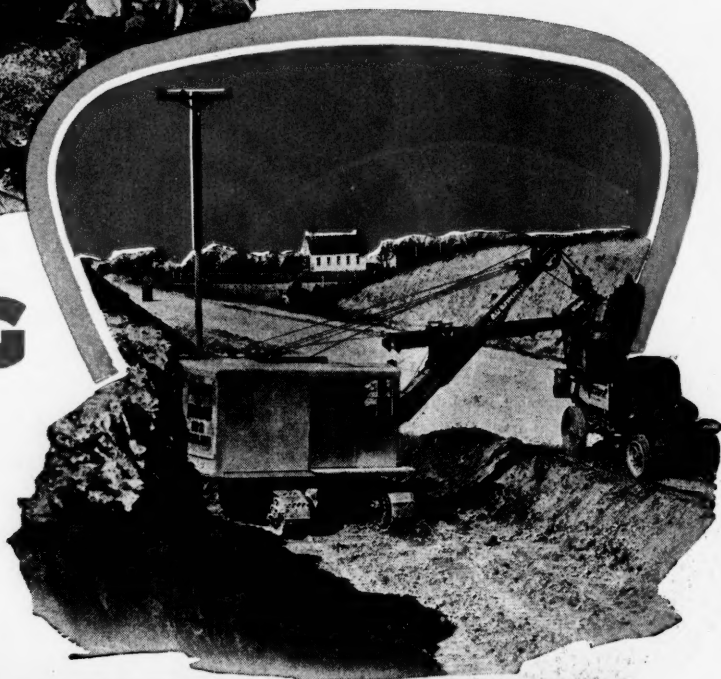
Cleveland, Detroit, Cincinnati, Pittsburgh, Milwaukee, Grand Rapids, Toronto, Ont.

Deutsche Carborundum Werke, Reisholz bei Dusseldorf, Germany



## KOEHRING Paver

## KOEHRING Shovel



### Koehring Autocycle Paver

**A**LWAYS the "Heavy Duty" paver! Koehring Autocycle means accurately timed automatic actions from the raising of the skip to discharge of concrete from the drum! No possibility of a wasted second! Precise, safe, fast operation that sets the pace for the job!

*The Dependable Smith Paver.* Operator easily maintains high speed operation and fast accurate placement of concrete on subgrade. With INSLEY Tower provides portable chain system for retaining wall construction, grade separation work, etc. Write for catalog.

### Koehring Heavy Duty Shovels!

*Capacities rated, not on the "heap" but by truck measure on line-of-plats! What you get in "heap" is extra capacity.*

*Full power behind either hoist or crowd! No dodging away from the job! Cuts out the time-wasting "nibbling" to get a dipper load.*

*Crowds above and beyond end of boom, giving full*

*working range and requiring less working room! Boom shock absorbers protect boom and dipper sticks!*

*Raise or lower boom without adjusting crowding cables! Ready for any job at command of control levers! Finger-Tip ease of control! It's another Heavy Duty Koehring!*

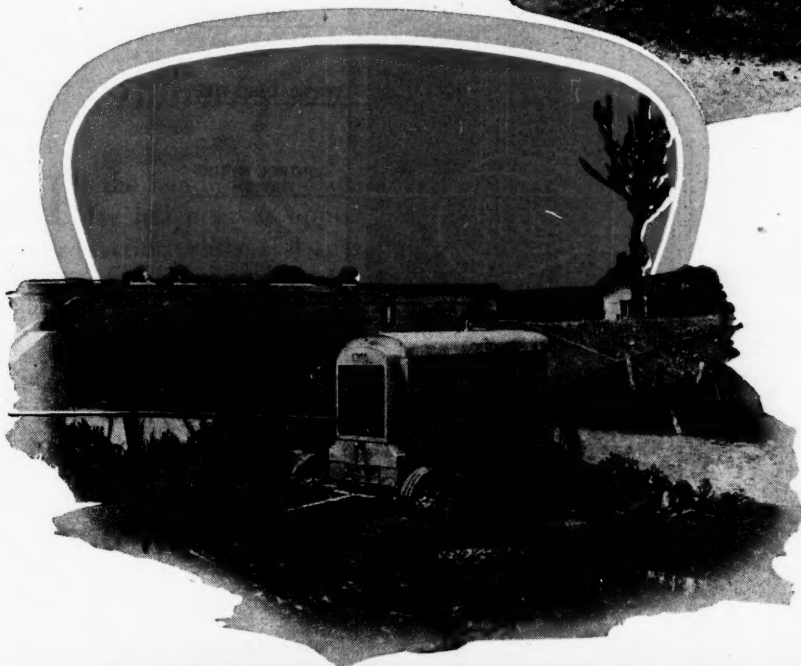
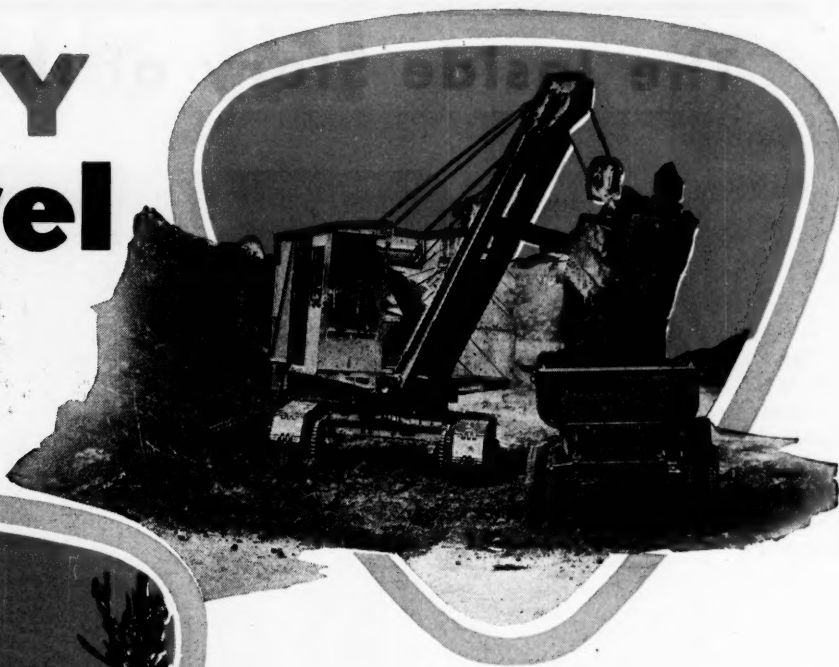
**Know N. E. C. Standards of Engineering, Construction and Service!**

# National Equipment



# INSLEY

## Half-Yard Shovel



# C.H. & E.

## Road Pump



### Half-Yard Insley

**T**HE Insley is the outstanding value of the half-yard shovel field. It has roller and ball bearings on every high speed shaft, insuring efficient transmission of power from the engine to the bucket—long life without wear and tear—and effortless operation.

It is fast—gets over the ground easily—steers with either track—has two traveling speeds—and plenty of power. It is made as a shovel, ditcher, skimmer, crane or dragline—and either full revolving or with 210° swing. It gives full coverage of the half-yard field.

### C. H. & E. Road Pump

**D**ON'T risk shutdown of whole job because of pump failure!

Nothing is more important to continuous operation than mixer water supply, and that's why

the C. H. & E. Triplex Road Pump is built for outstanding dependability. No. 11 delivers 80 gallons per minute to distance of 5 miles, 70 gallons at distance of 7 miles. Write for C. H. & E. Triplex Road Pump Catalog.

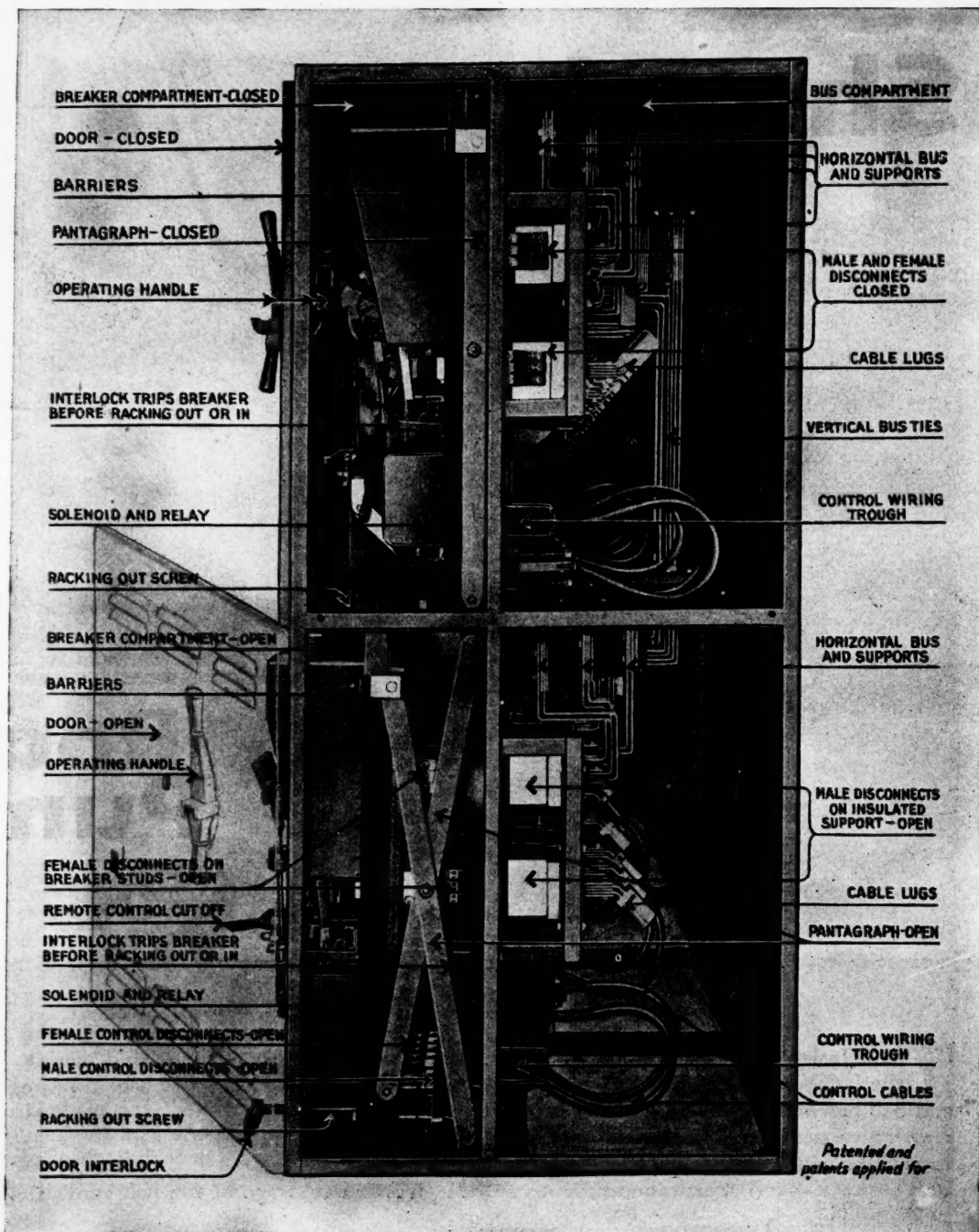
*Know What They Mean to Greater Road-Building Profits!*

# Corporation *Milwaukee*



## The Inside Story of the Multumite

"The  
World's  
Largest  
Builders  
of  
Air-Type  
Circuit  
Breakers"



"The  
World's  
Largest  
Builders  
of  
Air-Type  
Circuit  
Breakers"

This is a Multumite-Hingite group mounting ten solenoid operated U-Re-Lites of 1250 amperes capacity at 440 volts, 3 phase, 60 cycles. Multumite groups are also made without the double disconnects (Rigite con-

struction) and with hand operated U-Re-Lites mounted from two to six high, according to capacity.

Get in touch with our nearest representative for data on a Multumite group to meet your requirements.

I-T-E CIRCUIT BREAKER COMPANY, 19th and HAMILTON STS., PHILADELPHIA

Birmingham, Crawford Bldg.; Boston, 201 Devonshire; Buffalo, Ellicott Sq. Bldg.; Chicago, 333 N. Michigan Ave.; Cincinnati, Union Trust Bldg.; Cleveland, Terminal Tower Bldg.; Dallas, Burt Bldg.; Denver, Tramway Bldg.; Detroit, Penobscot Bldg.; Duluth, Providence Bldg.; Kansas City, Midland Bldg.; Los Angeles, 108 W. 3rd; Minneapolis, Plymouth Bldg.; Montreal, 151 LaSalle; New Orleans, 708 Girod St.; New York, 12 E. 41st St.; Omaha, Electric Bldg.; Philadelphia, 1505 Race; Pittsburgh, Grant Bldg.; St. Louis, Bank of Commerce Bldg.; San Francisco, Call Bldg.; Seattle, 802 33rd Ave.; Toronto, 149 Adelaide St. E.; Vancouver, 500 Beatty Street; Winnipeg, National Carriage Office Building.

# I-T-E PROTECTION

U-RE-LITES ~ I-T-E CIRCUIT BREAKERS



# SAVE IN PRODUCTION COST with better material-handling

*Electric Industrial Trucks  
equipped with Exide-Ironclad  
Batteries save money*

**I**N the handling of material, industry today has a great opportunity to reduce production costs and increase net profits. This can be accomplished by using electric industrial trucks equipped with Exide-Ironclad Batteries.

Electric industrial trucks move material with speed, efficiency and economy. When

powered with Exide-Ironclad Batteries they not only maintain a good speed throughout the entire day's operation, but do it at the lowest possible cost.

Exide-Ironclad Batteries are entirely different from all others. Their rugged construction, the result of 43 years of specialized manufacturing experience, enables them to deliver years of day-in and day-out service with minimum care and attention. They are long-lived, powerful, and economical at the charging panel.

Investigate electric industrial trucks and Exide-Ironclad Batteries for your material-handling job. Write for Bulletin 160-R.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia  
The World's Largest Manufacturers of Storage Batteries for Every Purpose  
*Exide Batteries of Canada, Limited, Toronto*

## Exide IRONCLAD BATTERIES



**FASTER, QUICKER, more economical**  
handling with electric industrial trucks  
powered by Exide-Ironclads. That's just  
the kind of handling these trucks do  
in a large manufacturing plant. And  
dependable, long-life Exide-Ironclads  
furnish the power.

# • YOUR CANNOT GIVE YOU THIS



## ARMCO PLANTS

Middletown, Columbus, and Zanesville, Ohio

Butler, Pa.

Ashland, Ky.

Joint plant at Hamilton, Ohio

*Back of this familiar symbol is nearly thirty years' experience in the making of special analysis iron and steel sheets and plates. When you need a rust-resisting, low-cost metal be sure to see this triangle and the words "Armco INGOT IRON." It is your assurance of adequate and dependable service.*

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WORLD'S LARGEST EXCLUSIVE PRODUCER OF SPECIAL



# BANKER

## VITAL INFORMATION

...and yet it is just as important  
to your business as financial advice

**W**HEN you need investment advice, you intuitively turn to your banker. He is a tower of strength, an unfailing guide in time of financial perplexity.

Investing wisely in iron and steel sheets and plates is another problem, and often just as perplexing if the investment is to be sound and profitable. Here, Armco can show you the way to economy and efficiency, and an adequate return from every dollar spent.

Whether you require special electrical sheets, or heavy-duty, rust-resisting plates the selection is measured strictly by the purpose. And back of your purchase is the cumulative experience of the world's *first* and *largest* exclusive producer of special analysis iron and steel sheets and plates.

You will find at Armco the alertness, dependability, and resourcefulness that are so important in establishing a standard source of supply.

Yours may be a great manufacturing enterprise, requiring thousands of tons of uniform steel sheets of special analysis, precise tempers, and flawless finish. . . . Or a small foundry seeking rust-resisting sheets for long-time weather protection. Whatever it is in sheets and plates and pipe, Armco can supply it, promptly and satisfyingly.

In all this, Armco chemists, metallurgists, and research engineers—highly trained and experienced—are at your disposal. They are your “bankers in metal”—men who will help you realize the greatest possible dividends from your investment. Any of the offices shown below will welcome your request for their services. Write to them for this valuable cooperation.

### The AMERICAN ROLLING MILL CO.

Executive Offices, Middletown, Ohio

Export: The ARMCO International Corporation

#### DISTRICT OFFICES

Chicago — Cincinnati — Cleveland — Detroit — New York  
Philadelphia — Pittsburgh — St. Louis — San Francisco



PRODUCERS OF  
**ARMCO IRON AND STEEL  
SHEETS**  
FOR EXACTING PURPOSES

ANALYSIS IRON AND STEEL SHEETS AND PLATES

# T STEEL

**D**AY after day and year after year, Tennessee's mills are producing an ever-increasing line of products to satisfy the expanding needs of its customers. When the demand has arisen for a new product, Tennessee has been ready to supply it... when the trade has required a new section, Tennessee has prepared rolls for it. In addition to standard and light rails and accessories, our range now includes a full line of Bars, Plates, Shapes and Sheets in Open Hearth or Tennessee Copper Steel Quality... all manufactured to an uncompromising standard of excellence which is guarded by an ever alert system of inspection. Heavy mill stocks are carried to satisfy the present day demand for quick deliveries. When you are rushed for time, you will appreciate this service.

*Products: Bars, Plates, Shapes, Sheets, Tool Steel, Forgings, Castings, Rails and Accessories, Semi-finished Materials, Pig Iron.*



## Tennessee Coal, Iron & Railroad Company

General Offices: Brown-Marx Building, Birmingham, Ala.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION



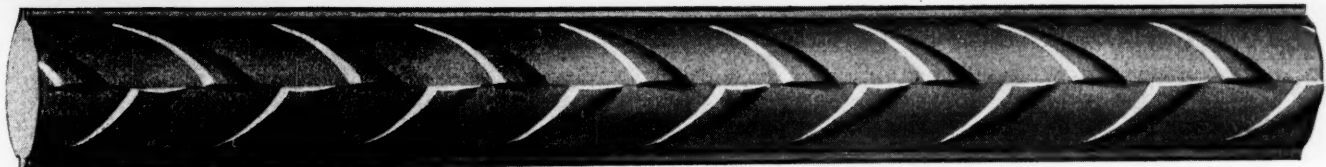
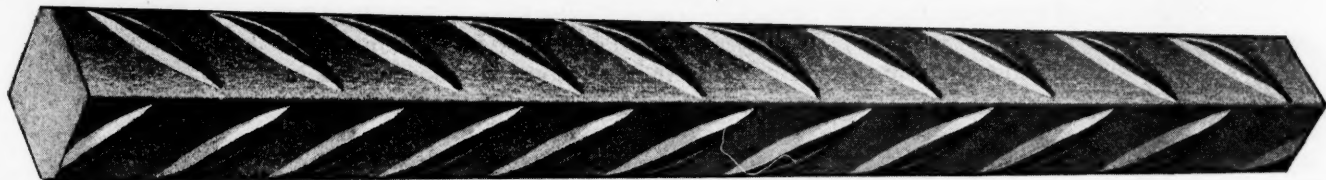
AMERICAN BRIDGE COMPANY  
AMERICAN SHEET AND TIN PLATE COMPANY  
AMERICAN STEEL AND WIRE COMPANY  
*Pacific Coast Distributors* - Columbia Steel Company, San Francisco, Los Angeles, Portland, Seattle, Honolulu.

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES OF UNITED STATES STEEL CORPORATION:  
CARNegie STEEL COMPANY  
COLUMBIA STEEL COMPANY  
CYCLONE FENCE COMPANY  
FEDERAL SHIPB'LDG. & DRY DOCK CO.  
ILLINOIS STEEL COMPANY  
NATIONAL TUBE COMPANY

THE LORAIN STEEL COMPANY  
TENNESSEE COAL, IRON & RAILROAD CO.  
UNIVERSAL ATLAS CEMENT COMPANY  
*Export Distributors* - United States Steel Products Company, New York City



# NO RESPONSIBILITY TOO GREAT FOR GULFSTEEL REINFORCING BARS



**GULFSTEEL**  
**Reinforcing Bars**  
were used for the construction of  
the Birmingham, Ala., 24th Street  
Viaduct shown above  
Davis Construction Co., Atlanta  
Contractors  
Engineering Department of the  
Southern Railway  
Architects and Engineers

**A** CHAIN is only as strong as its weakest link—a concrete structure only as strong as its reinforcing. The architect or contractor can specify GULFSTEEL Reinforcing Bars with the knowledge that he is using the most dependable reinforcing that can be made and that he can buy. GULFSTEEL Reinforcing Bars will carry the load, and stand up without cracking. Made from *new billet steel*, with a maximum amount of deformation that is equal in size and evenly spaced.

*Samples furnished upon request*

## GULF STATES STEEL COMPANY

BIRMINGHAM, ALABAMA

Pig Iron   Wire Rods   Plates—Sheared and Universal  
Billets   Bars   Sheets—Black, Blue  
Slabs   Angles   Annealed and Galvanized



REG. U. S. PAT. OFF.

Barbed Wire   Wire and Rods, Straightened and Cut  
Galvanized Wire   Woven Wire Fence   Bale Ties  
Bright and Annealed Wire   Nails (all kinds)   Staples

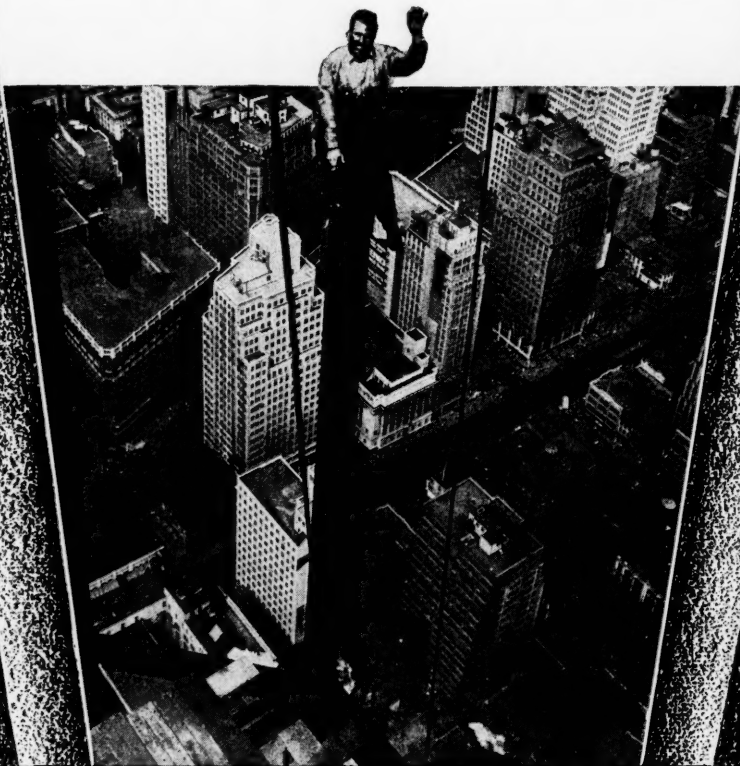
# STEEL CLIMBS HIGH

**U**P AND UP . . . fifty, sixty, seventy, eighty-five floors . . . climbed the steel for the world's highest structure, the Empire State Building in New York City. The enormous investment of 55 million dollars in this mammoth building made it imperative that construction be speeded to a pace never before equalled. More than 50,000 tons of steel to be rolled, milled, fabricated and erected between March and September! C B's (Carnegie Beams) were selected for the job. In this crowded section of the city there was little space for temporary storage of steel beams. Shipping schedules had to be worked out and accurately timed. Very often the girders were lifted from the delivery trucks to their proper place in the structure!

Exceptionally heavy construction was required to carry the enormous load. The heaviest C B column section weighs 425 pounds per foot. For the main columns on the lower floors these sections were built up by fabrication to weigh 2357 pounds per foot!

Whether the job be large or small, the wide parallel flanges of C B sections present distinct advantages to the architect, engineer and builder. They will climb as high as man finds it economically desirable to build.

112



**CARNEGIE STEEL COMPANY » » PITTSBURGH**

*Subsidiary of United States Steel Corporation*



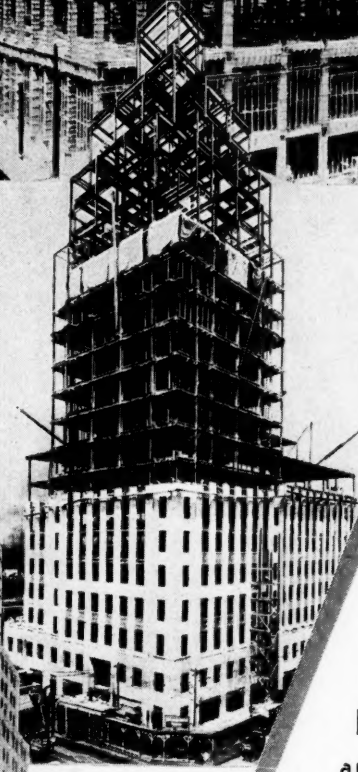
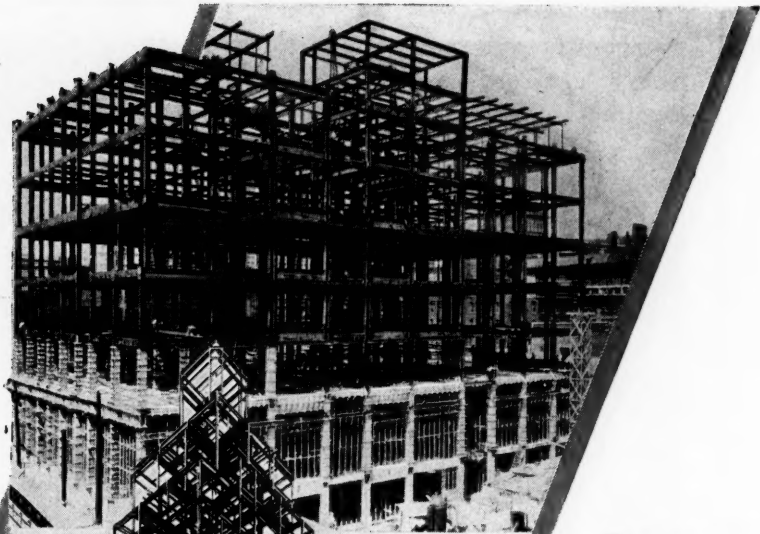
THE TALL TREE HAS  
A STRONG TRUNK—  
OTHERWISE IT WOULD  
NOT GROW TO BE  
TALL

Top: Telephone Building, Atlanta, Ga. Marye, Alger & Vinour,  
Archts.; W. C. Spiker & Co., Engr's; Barge-Thompson Co.,  
General Contractors, all of Atlanta.

Upper Center: Reynolds Building, Winston-Salem, N. C.  
Shreve & Lamb, New York, Archts.; James Baird Co.,  
New York, Gen'l Contrs.

Lower Center: Sterick Building, Memphis, Tenn. Wyatt  
C. Hedrick, Fort Worth, Texas, Architect.

Bottom: Smith-Young Tower Building, San Antonio,  
Texas. W. E. Simpson Co., San Antonio, Engi-  
neers. McKenzie Construction Co., San Antonio  
General Contractors.



**FABRICATED**  
Structural  
Steel is the  
trunk of the mod-  
ern skyscraper.  
Without the  
strength and com-  
pactness of steel the  
great building heights  
of today would not be  
possible.

Over a period of years we  
have designed, manufactured  
and erected the steelwork  
for a great number of tall  
buildings from Virginia to Cali-  
fornia. The four shown here are  
recent and typical. But we are  
proficient not just in skyscrapers or  
big bridges. We do lots of small,  
simple work and an endless variety of  
small, intricate, exacting fabrication.  
Large or small, all, orders receive the  
same careful attention and handling. Let  
us quote you prices and deliveries on your  
work.

**VIRGINIA BRIDGE & IRON CO.**  
Roanoke Birmingham Memphis Atlanta New Orleans  
New York Los Angeles Charlotte Dallas El Paso

**VIRGINIA BRIDGE**  
STEEL STRUCTURES

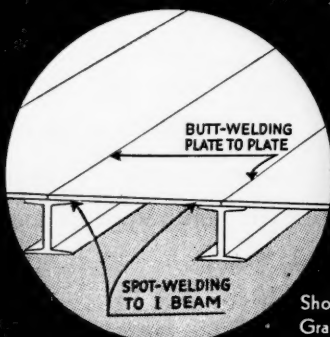
**An Extra Floor  
and less  
dead weight  
per floor**

## Granite City Plates for Battle Deck Floors

**IF** you are engaged in the planning, financing or construction of a commercial building, don't overlook the advantages of Battle Deck Floors.

They reduce dead weight—approximately 50% over the usual type of floor construction. In multi-storied buildings they can increase rentable area one floor in every 20.

Granite City Plates, with their excellent welding properties, are particularly suited for use in Battle Deck Floors. Further information about their application or use in this ultra modern type of floor construction will be sent on request.



Showing application of  
Granite City Plates for  
Battle Deck Floors.

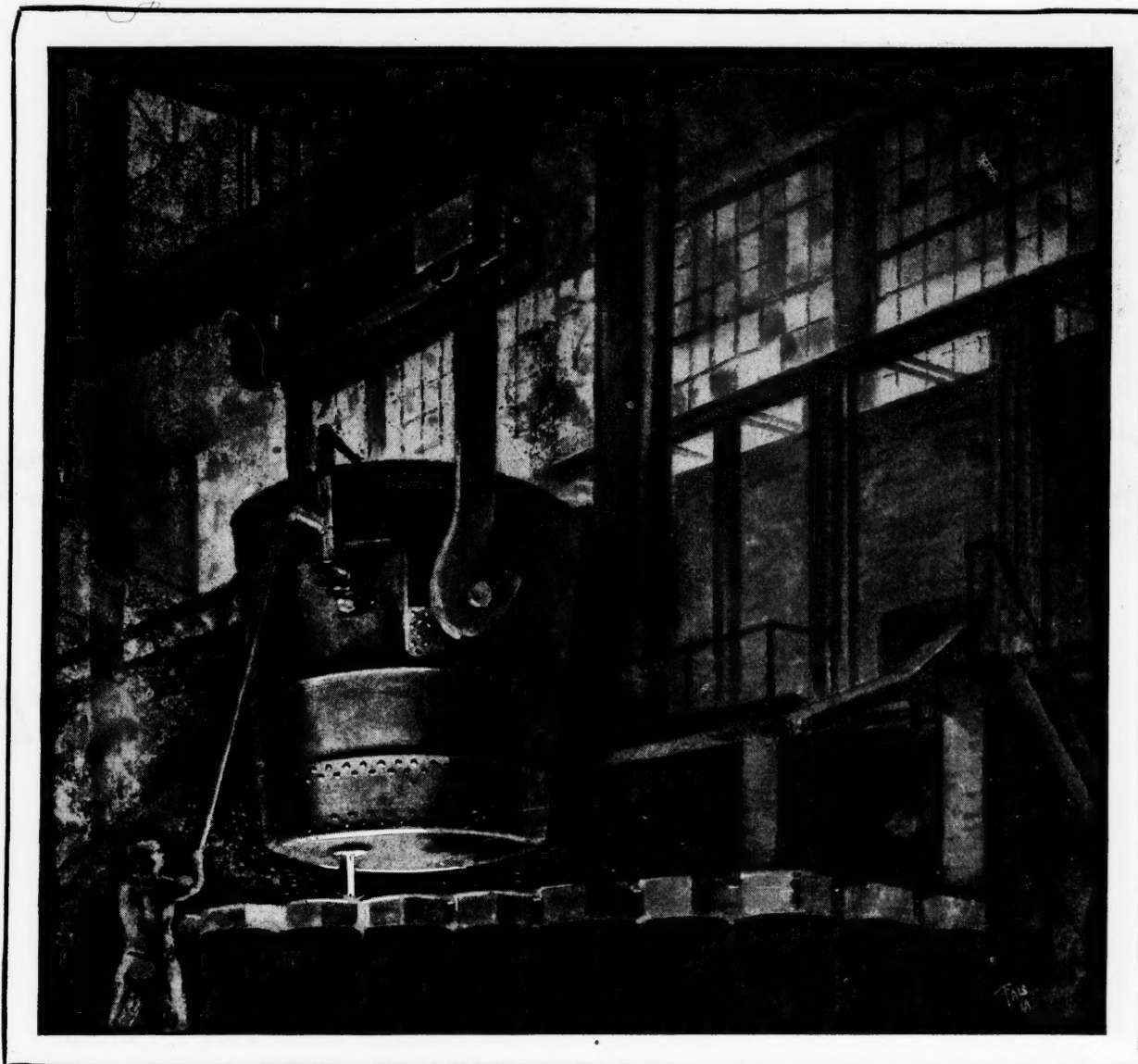
Kansas City  
Los Angeles  
Chicago  
Dallas

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**GRANITE CITY STEEL CO.** GRANITE CITY ILLINOIS  
Galvanized, Blue Annealed and Black Sheets - Plates and Tin Plate





## Pouring a heat of Acid Steel *for Roebling Wire Rope*

THE MOLTEN METAL has been tapped into a huge ladle. And now it is being poured into the molds. Soon, in the form of ingots, it will be on its way through a seemingly endless number of processes. Finally it will be shipped out as Roebling "Blue Center" Steel Wire Rope.

Roebling Quality starts with the making of the steel and is Roebling-controlled every step of the way. It is the result

of highly developed, modern production methods plus close attention to detail.

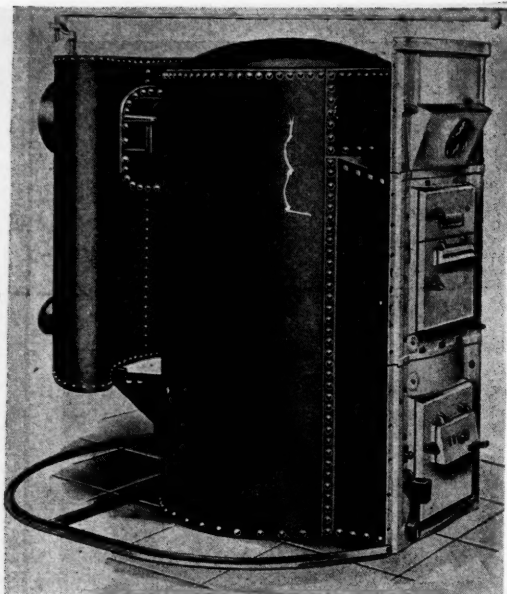
Throughout the 48 states, millions of feet of Roebling "Blue Center" Steel Wire Rope are daily demonstrating the safety and economy assured by Roebling Quality in every type of service.

JOHN A. ROEBLING'S SONS COMPANY  
WIRE • WIRE ROPE • WELDING WIRE • FLAT WIRE  
COPPER AND INSULATED WIRES AND CABLES  
TRENTON, N.J. *Branches in Principal Cities*

# ROEBLING



# WIRE ROPE



*A modern riveted furnace, fabricated  
from Youngstown Sheets*

# A better FINISHED PRODUCT

*...at a lower fabricating cost*

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**Y**OUNGSTOWN Copperoid steel sheets offer these two distinct advantages to manufacturers of any products fabricated from sheet steel. These sheets make a better product because they are more durable, highly resistant to corrosion, and take a better finish. They are ductile, easy to form, and easy to weld.

Any article made from sheet steel can be made better from Youngstown Copperoid. For complete details, 'phone, write or wire the nearest Youngstown Sheet and Tube Company office. Youngstown products are distributed by leading jobbers everywhere.

#### THE YOUNGSTOWN SHEET AND TUBE CO.

*One of the oldest manufacturers of copper-steel, under  
the well-known and established trade name "Copperoid"*

General Offices: YOUNGSTOWN, OHIO

# YOUNGSTOWN

GALVANIZED SHEETS PROTECT • SAVE WITH STEEL

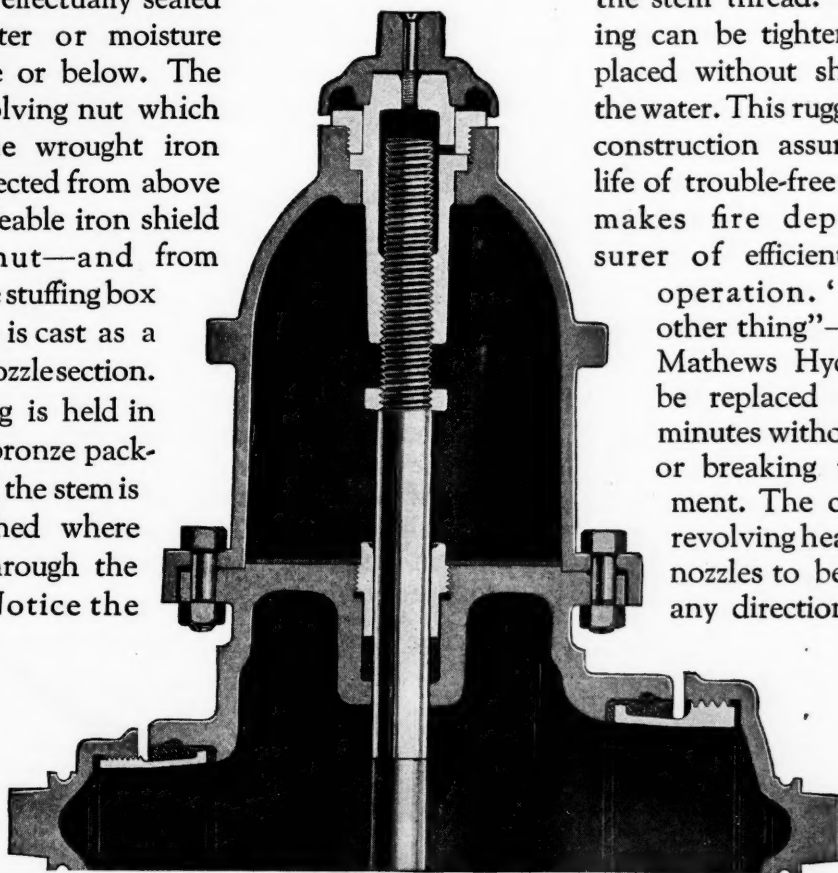
**The OPERATING THREAD of the**

# MATHEWS MODERNIZED HYDRANT

Reg. U. S. Patent Office

**IS SEALED . . . NO MOISTURE  
CAN REACH IT . . .**

No frozen threads—no threads stuck or destroyed by rust—because the Operating Thread of the Mathews Modernized Hydrant is effectually sealed against water or moisture from above or below. The bronze revolving nut which operates the wrought iron stem is protected from above by the malleable iron shield operating nut—and from below by the stuffing box plate which is cast as a part of the nozzle section. The packing is held in place by a bronze packing nut, and the stem is bronze bushed where it passes through the packing. Notice the



generous length of the operating thread. At the full open position, the revolving nut thread is completely in contact with the stem thread. The packing can be tightened or replaced without shutting off the water. This rugged, simple construction assures a long life of trouble-free service—makes fire departments surer of efficient hydrant operation. “And another thing”—a broken Mathews Hydrant can be replaced in a few minutes without digging or breaking the pavement. The completely revolving head enables nozzles to be faced in any direction—easily.

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VALVE BOXES  
FLOOR STANDS

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*In business continuously since 1803*

**400 Chestnut Street :: Philadelphia**

CAST IRON PIPE  
SAND SPUN  
(centrifugally cast)  
and PIT CAST  
Reg. U. S. Pat. Off.



# NATIONAL Copper-Steel Pipe

THE extra durability of NATIONAL Copper-Steel Pipe has thoroughly demonstrated this the logical and economical choice for piping exposed to atmospheric corrosion or wherever alternate wet and dry conditions prevail. Nearly twenty years of actual tests and service records prove the saving made due to minimized corrosion is proportionately far greater than the small additional investment. Ask for Bulletin 11—describing NATIONAL Copper-Steel Pipe—

*The Original Copper-Steel Pipe*



**NATIONAL TUBE COMPANY**  
*Frick Building, Pittsburgh, Pa.*



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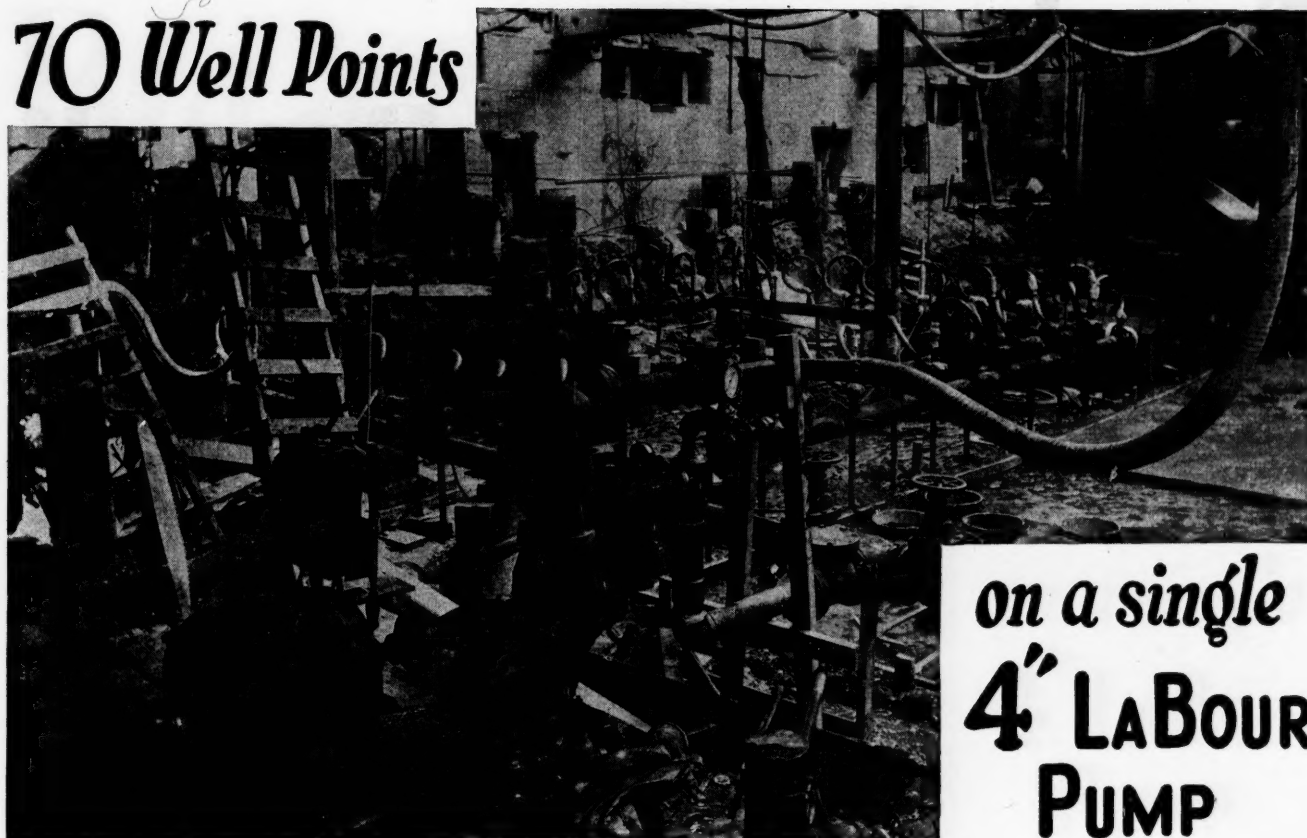
ILLINOIS STEEL COMPANY  
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NATIONAL TUBE COMPANY

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on a single  
**4" LABOUR  
PUMP**

In preparing for the construction of the Central Hanover Bank & Trust Company Building, a single 4" LaBour pump handled 70 well points. No vacuum pump was used as the one LaBour pump was quite able to handle the job all by itself. The LaBour pump shown in the above photograph is one of the nine LaBour pumps which were used on this job. No trouble was experienced with any of the pumps.

Records like this offer conclusive proof of the performance regularly delivered by LaBour Pumps. These self-priming centrifugal pumps handle air and water in a single pump without valves or floats or any auxiliary mechanism.

The extreme simplicity of LaBour Pumps and the fact that they have but one moving part assures long periods of uninterrupted service.

We shall be glad to send you full details about these pumps and our experience is at your service without cost or obligation on your part.

Here illustrated is the latest addition to the LaBour line. This Type WPD Pump is easily portable, weighing less than a thousand pounds. It contains all the usual LaBour features and will handle 400 gallons of water per minute at a 25 foot head.

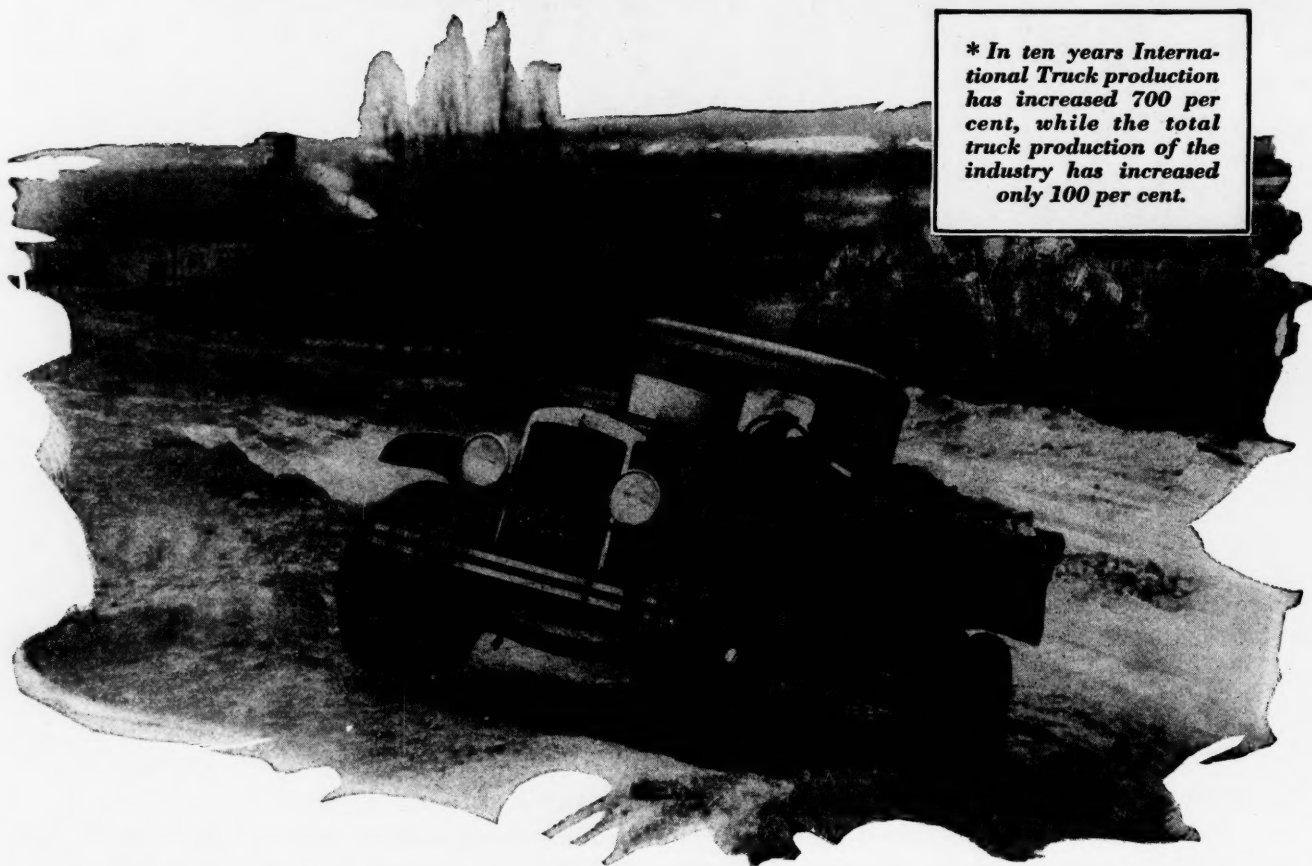


**THE LABOUR CO., INC.**  
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# LA BOUR PUMPS

NEVER LAY DOWN ON THE JOB

# Topping a Remarkable Record!



*\* In ten years International Truck production has increased 700 per cent, while the total truck production of the industry has increased only 100 per cent.*

**C**CLIMAXING International Harvester's record\* of extraordinary growth and progress, comes the introduction of four new 6-cylinder Speed Trucks . . . 1½, 2, and 3-ton capacities. All have the same slim, sleek, speedy appearance, which is so much in demand today. And beneath their handsome exteriors are features of design and construction which contribute to improved performance and operating economy.

In these new models, sound engineering, extensive manufacturing facilities, and highly skilled workmen combine to advance the high standards set by other International Trucks.

The requirements of various classes of service are taken care of with a wide choice of wheelbase lengths, providing for the use of van, stake, panel, bus, dump, and tank bodies.

International Harvester branches and dealers now have these new Speed Trucks on display. Visit the nearest showroom and see for yourself the features of each model. A convincing demonstration will be arranged on request.

## INTERNATIONAL HARVESTER COMPANY

606 So. Michigan Ave. of America  
(Incorporated)

Chicago, Illinois

### Model AL-3 —1½ tons

6 cylinders—4 speeds forward  
—138", 152", and 164" wheelbases—Spiral bevel drive.

### Model A-4—2 tons

6 cylinders—5 speeds forward  
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### Model A-5—3 tons

6 cylinders—5 speeds forward  
—140", 156", 170", 190", and 210" wheelbases—Spiral bevel drive.

### Model A-6—3 tons

6 cylinders—5 speeds forward  
—140", 156", 170", 190", and 210" wheelbases—Double reduction drive.

# INTERNATIONAL TRUCKS



# Big Y

Shovel  
 of  
 DESIGN



A  
 COMPLETE  
 LINE  
 1/2 to 3 1/2  
 cu.yds.

GREATER YARDAGE  
 FOR LESS PER YARD

# P & H SHOVELS

**D**ESIGN and construction are the basis of shovel performance. The best operator cannot get big yardage out of a poorly designed machine. To a large extent the shovel is responsible for yardage.

So if you are interested in low-cost production—greater yardage at lower cost—consider P & H Shovels. They are built up of unit steel castings—a type of construction that insures permanent alignment and low maintenance. Motors, either gas or Diesel, are of large size so that line and swing speeds are exceptionally fast.

The tractions are built with a heavy cast steel frame and there are no rivets to work loose. The tractions will last the life of the machine.

A powerful patented chain crowd will force the dipper into the toughest soil and permits accurate cutting to within one inch of grade.

Watch a P & H Shovel perform, for performance alone will demonstrate its many features. For more information, write the

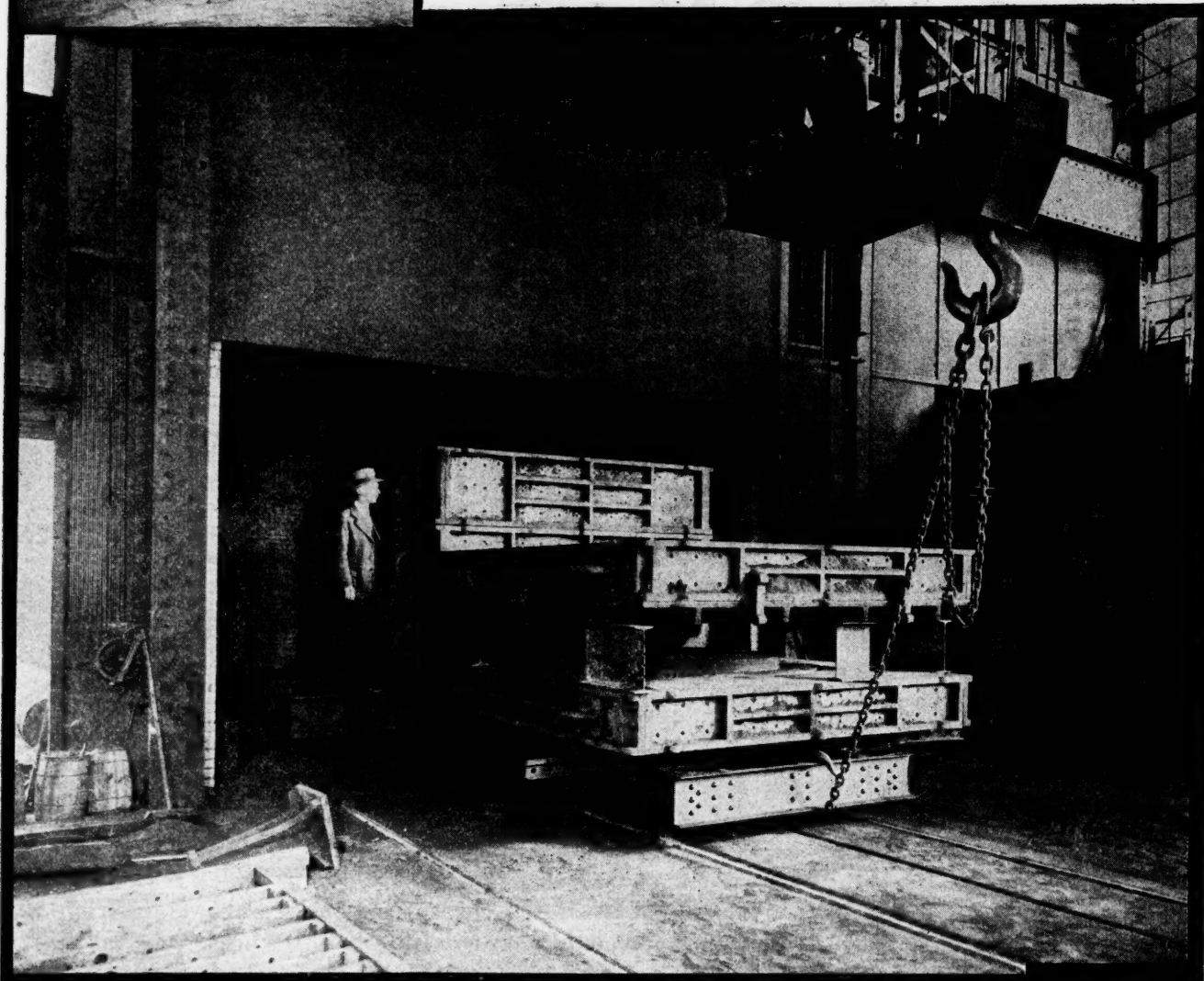
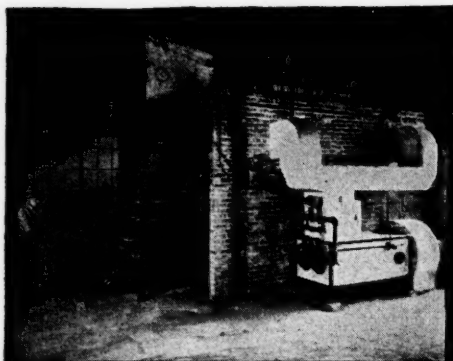
**HARNISCHFEGER CORPORATION**

Established in 1884

4427 W. National Ave., Milwaukee, Wis.

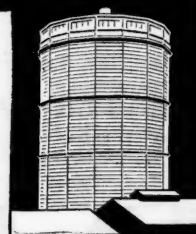
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 WAREHOUSES & SERVICE STATIONS: Dallas, Jacksonville, Memphis.  
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# You can do **this** better with **gas**

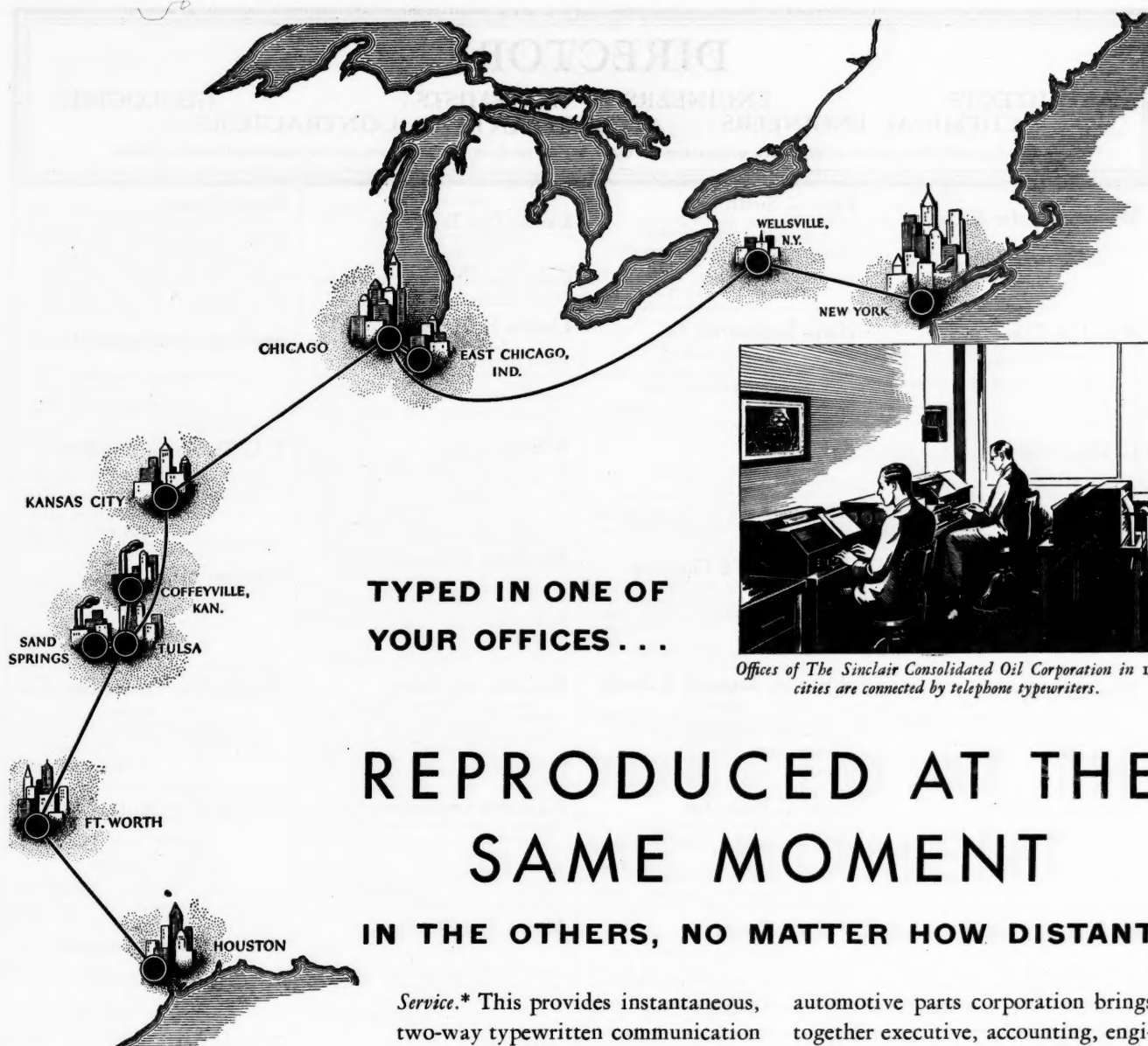


JUST one significant fact: the growth in the use of gas for core and mold drying in American foundries is greater than that of any other innovation in the foundry industry. The reason? **You can do it better with gas.**

A M E R I C A N   G A S   A S S O C I A T I O N  
420 Lexington Avenue, New York



A postal card brings your copy of the free book "Gas Heat."



TYPED IN ONE OF  
YOUR OFFICES . . .

Offices of The Sinclair Consolidated Oil Corporation in 10 cities are connected by telephone typewriters.

## REPRODUCED AT THE SAME MOMENT IN THE OTHERS, NO MATTER HOW DISTANT

PRESENT-DAY conditions require that all units of a company—headquarters, plant, sales offices or factory branches—be placed at the points most strategic for their particular purposes. But the distance separating them is a serious handicap.

To overcome this, the Bell System offers a modern means of business communication: *Telephone Typewriter*

*Service.\** This provides instantaneous, two-way typewritten communication between all units. It makes possible complete centralized control. Handicaps of distance disappear. Deliveries are speeded up, affording exceptional service to customers. Production is held closely to demand. Overhead is cut.

A steel company links its headquarters in Ohio with three plants in the Chicago industrial area. A lumber company connects forest mill with San Francisco sales office. An

automotive parts corporation brings together executive, accounting, engineering and sales departments in one state and factory in another. An official of this company writes: "The service has not only reduced our communication expense, but has been at the same time a factor in efficient operation."

Would this modern business aid be of similar value to your firm? Your local Bell Company will gladly give you complete information about it.

\*Telephone Typewriters can be operated by any one who can operate a typewriter. They are connected by Bell System wires in such a way that the instant a message is typed on one machine it is automatically typed by every other machine on the line, no matter how distant it may be. Among the uses to which Telephone Typewriters are put by various departments are:

**ADMINISTRATION:** Issue instructions to district offices, plants, warehouses. Receive reports of all kinds.

**SALES:** Have orders shipped the same day as received. Route salesmen. Receive confirmation of shipments from factories. Broadcast stock and latest price information.

**PURCHASES:** Centralize purchasing for the entire organization. Receive supply requisitions, specifications. Advise factories, branches, of purchases made. Keep close check on arrival of purchases.

**PRODUCTION:** Receive production and inventory reports. Maintain close contact with sales and other departments.

**ORDERS:** Transmit customers' orders to the factories.

**BILLING:** Centralize the billing. Mail invoices the same day orders are shipped.

**TRAFFIC:** Dispatch shipments. Obtain shipping dates and necessary information for tracing shipments. Issue routing instructions.





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CHEMICAL ENGINEERS

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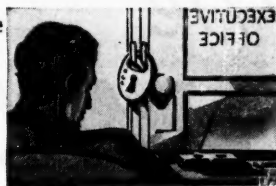
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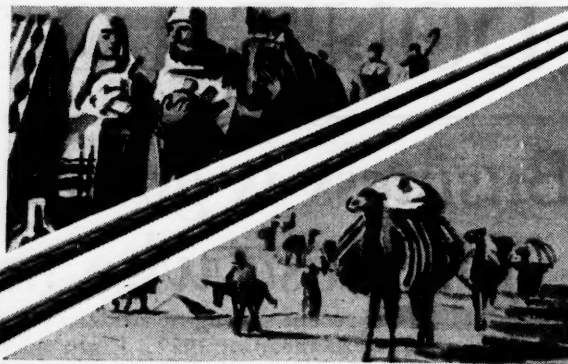
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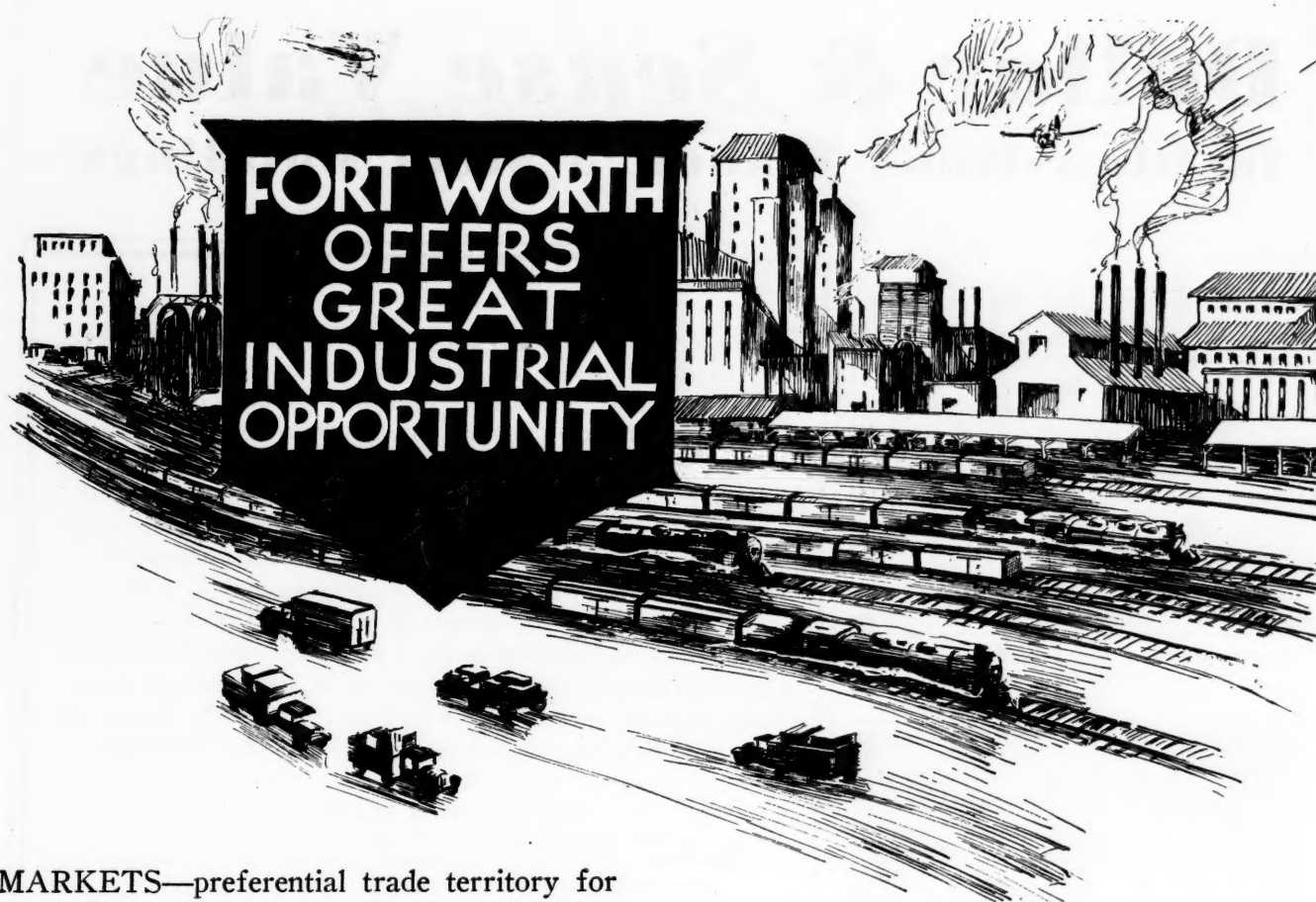
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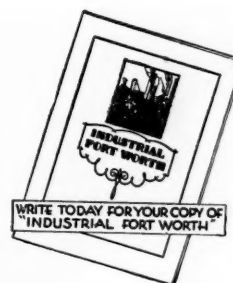
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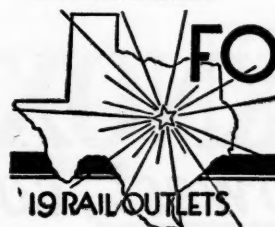
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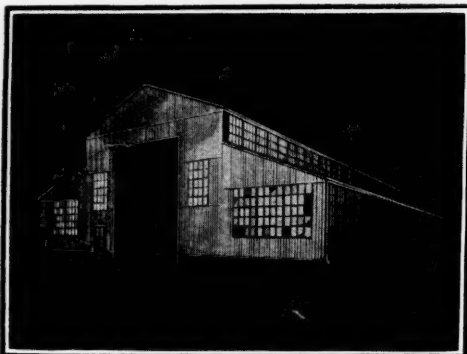
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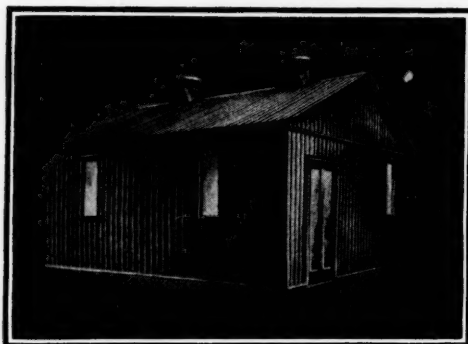


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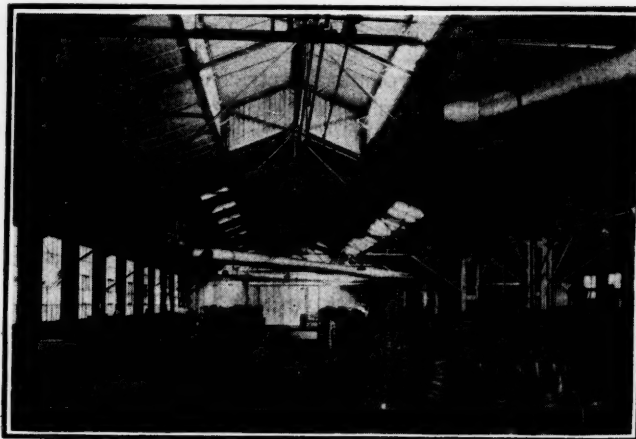
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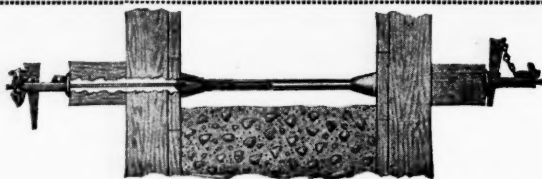
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Vol. XCIX No. 2 }  
Weekly }

BALTIMORE, JANUARY 8, 1931

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## \$600,000,000 for Southern Highways

A TOTAL highway improvement investment of \$600,000,000 is to be made by states, counties and cities of the South during 1931, representing a gain of ten per cent over 1930. This estimated expenditure will include \$300,000,000 for the state highway systems alone, while bond issues proposed in several Southern states are likely to increase this amount. Based on this projected program, the South is to experience its greatest road-building period.

In many states efforts are being made to accelerate construction of public works to relieve the unemployment situation. Highway development is a leading factor in every program of this kind. With more than 50 per cent of the road building dollar going directly to labor and an even larger percentage benefiting labor—when workers employed in the production of machinery and materials for road work are included—the immediate result of larger road programs is to stabilize employment. The cost of such work is returned many times over to states and communities, for improved highways are an investment paying dividends through increased property values and reduced transportation costs. Public expenditure at this time is advisable, with construction costs down and the public able to secure greater values for tax moneys.

The dominating theme in the feature articles in this week's issue is the desirability of securing more and better highway facilities as a part of our national development. The need for such facilities constantly increases. Motor vehicle usage the year round has become general. Truck and bus transportation has extended beyond circumscribed areas and competes with the railroads on long hauls. Traffic congestion on arterial highways and in metropolitan districts not only impedes the speedy movement of motor vehicles, but also exacts a heavy toll in the loss of life and property.

All that we have done in the past in the building of highways fades into insignificance when we consider the ambitious plans for regional highways to serve such centers as New York, Chicago, Cleveland, Pittsburgh, Newark and other points. When it is remembered that summer traffic on one main route in New Jersey exceeds 50,000 vehicles a day, the fact that the state is building a 3-mile stretch at a cost

of \$20,000,000 seems in line with motor transport needs. Elevated super-highways are being constructed to facilitate movement of through traffic in congested areas of the state. Costly highway grade separation projects have been completed and others are now being built to eliminate intersections. Traffic circles have been designed to prevent congestion at points where more than two highways intersect. Roadways with 100-foot rights-of-way have become common in New Jersey. Around Detroit super-highways with 240-foot rights-of-way are in use. To avoid traffic in cities by-pass routes have been built and are further projected for state systems. Great sums of money are being expended to straighten roads constructed only a few years ago that are unsafe today. Elimination of dangerous curves and railway grade crossings and the rebuilding of obsolete highways calls for heavy expenditures.

While the need for these continued outlays is apparent and the fact is accepted that they will help in relieving the unemployment situation and in preventing motor vehicle transportation paralysis, road progress is endangered by continued diversion of gasoline tax revenues to other than road building and road maintenance purposes. Fifteen states have voted portions of such funds to the building of state airports, fish hatcheries, schools, port facilities and like undertakings. Road builders and motor vehicle manufacturers are awake to the seriousness of the situation and will exert every reasonable effort to prevent further diversion of such funds. There is a real danger that at least 13 states will not have sufficient funds available to meet Federal aid appropriations; yet some politicians do not hesitate to divert to every conceivable type of project the gasoline tax revenue which is collected in the form of a road toll.

Meanwhile, there is urgent need for the building of great mileage of secondary highways of the low-cost type. Farm-to-market roads are a necessity.

At the end of 1929 the state highway systems of the country showed a grand total of 314,000 miles, comprising a non-surfaced mileage of 105,812; an unimproved and partly graded mileage of 77,259; roads established to grade and drained 28,553 miles, and a surfaced mileage of 208,324.

Of the surfaced mileage on state highway systems,

more than half or 133,211 miles are of the low-type surface, including sand-clay, gravel, and waterbound macadam roads. Only 75,113 miles, or 37 per cent of the surfaced mileage, are of the high type; that is, bituminous macadam by penetration, sheet asphalt, bituminous concrete and portland cement concrete, vitrified brick, and asphalt, wood and stone blocks.

In view of ambitious programs now under way for speeding up road construction activities throughout the country, it is well to emphasize the hard surfaced mileage, by types of construction, on state road systems existing at the end of 1929, as included in the following:

Waterbound macadam, treated and untreated, 19,931; bituminous macadam by penetration, 14,043; sheet asphalt, 1,498; bituminous concrete, 5,722; portland cement concrete, 50,584; vitrified brick, 3,102; asphalt block, 886; wood block, 34; stone block, 44.

Taking into consideration 2,700,000 miles of local roads, which may be properly classed as secondary roads, as they are not on state systems, about 454,000 miles have been surfaced; but only 373,000 miles, or 8.2 per cent represents high type surfacing. This means that only slightly more than 660,000 miles out of a grand total of 3,000,000 miles of highways have been surfaced, and a little over 112,000 miles, or 17 per cent, are of the high type surface.

## Industry Eases Unemployment Distress

RECENT research tends to confirm the view that voluntary cooperation between employer and employe provides the best system of unemployment benefits and even may be expanded to old-age protection. Under this system, the unemployment plans are financed jointly by employers and workers.

On the whole, says a report of Industrial Relations Counselors, Inc., the consumption rate usually is 3 per cent of the payroll, contributed by employers alone or by employers and workers jointly. The benefit rates in 22 such plans in operation vary, ranging as high as \$16 a week for full time unemployment.

Thus far, none of the joint agreement plans has been abandoned because of financial difficulties, while two of the plans operated by employers and many of those operated by unions independently have come to grief.

From five years of successful operation, the system of the General Electric Company may be regarded almost as a model. The fundamentals as described by President Gerard Swope are: (1) Joint and equal contributions by employes of the company; (2) joint participation in the administration of the plan; (3) aid through group action to workers who are in need or require temporary loans, or become unemployed, or for whom only part-time work is available; (4) in times of unemployment emergency, cooperation and

assistance from employes not usually affected by unemployment, and assistance by the company, in equal amount.

Basically, no employe is eligible for unemployment benefits under this plan unless he has paid 1 per cent of his wages into the fund for six months. But it is interesting to note that the company has modified the plan to meet the present emergency, and this liberal spirit may be regarded as characteristic of modern American business.

"Benefit payments now consist of 50 per cent of the wages of those entirely unemployed, or a smaller amount sufficient to afford 50 per cent of normal wages to those on less than half-time employment," Mr. Swope adds. "Loans are being made in urgent cases in which the company feels that without such help real distress would develop."

Helpful as this plan is to the workers, it also is of value to the employer. A fine morale is inspired in the working personnel, the working force is kept virtually intact, and destructive labor agitation is discouraged. The benefits are not all on one side.

On much the same lines, Vice-President Leroy A. Lincoln of the Metropolitan Life Insurance Company asserts that "by joint and systematic action on the part of employers and employes the spectre of old-age dependency on the part of our working men and women will soon disappear." Retirement funds, he proposes, shall be built up by contributions from the employes, supplemented by contributions from employers, the employers' contributions to be charged to the cost of the product of the industry or enterprise involved.

Possibly the most important point developed in research and discussion of unemployment-aid and old-age protection is the fact that compulsory legislation is not necessary. Actually, it probably would prove harmful. The people of the country "must beware of the siren song of state aid, whether by way of unemployment doles or disability benefits or pensions," as Mr. Lincoln well puts it.

Modern American industry or business is in reality a partnership, in the operating phase, between the management and the worker. Experience tends to prove that these groups can work in harmony, with mutual profit, without outside interference.

## Encouraging

THE Louisville and Nashville Railroad has placed orders in Birmingham with the Tennessee Coal, Iron and Railroad Company for 50,750 tons of rail and approximately 10,000 tons of track fastenings and accessories, delivery to begin this month. This means a resumption of operations at the Ensley Works of the Tennessee Company where more than 1000 men will be placed back at work, directly and indirectly. The forces on the general development program of the Tennessee Company will be continued.



## Significance of the Railroad Plan

**A**CTUAL agreement on a plan for the establishment of four railroad super-systems in the East is a constructive achievement of great significance. The Class I railroads involved represent approximately \$5,000,000,000 of investment and about 50,000 rail miles and besides there are included some 200 lesser roads which are embraced in the plan.

The outstanding point is that a long step has been taken toward a general readjustment of the national railroad situation. More than \$24,000,000,000 of the people's money is invested in the national railroads, of which more than \$5,500,000,000, or 27½ per cent, is in the 16 Southern States and the District of Columbia. The annual income of the steam railroads approximates \$5,000,000,000. More than 1,500,000 persons are employed, with wages at nearly \$3,000,000,000 a year. Hundreds of thousands of railroad securities holders are dependent in some measure for their income on the stability and prosperity of the rail lines. Retrogression or even economic immobility in an industry of such magnitude would be a national misfortune.

The plan evolved is a definite step of the highest importance, with the starting point based on the geographical alignment of the properties. From this point, it is to be hoped further progress and still further constructive readjustments for the public good will be agreed upon.

The progressive activity of the great carriers involved in the present movement is a most encouraging factor toward business revival.

## Better Quality Cotton at Lower Cost

**"GROW Less—Get More!"** is the suggestion of a crop bulletin issued by the Federal Farm Board. The evils of overproduction of wheat and cotton are particularly stressed. In the main, the **MANUFACTURERS RECORD** is in accord with the view that acreage should be reduced on these two major crops. In the case of cotton, however, there is one point omitted by the Federal Farm Board which we believe to be of paramount importance; that is, better cotton should be grown.

In recent years, large areas in other countries have been put into cotton, countries where cotton of short staple variety is grown. This has seriously increased competition with most of the cotton grown in the United States, inasmuch as our own cotton has deteriorated in quality, while other countries are trying to improve their staple. At present there is no great disparity between much of the cotton produced in this country and that in foreign countries, and if Southern growers are to maintain their position as suppliers of more than half the world's cotton, not only must they grow more cotton on fewer acres, but they must

pay more attention to the longer staple varieties. Through better and more general use of fertilizer; through the culling out of poor cotton land; through selection of high-grade seed, and through adoption of more scientific farming methods and machinery, production costs would be lowered and at the same time the staple would be in greater demand and bring higher prices because of improved quality.

We do not believe that decreased acreage of cotton alone would solve the cotton farmer's problem. Continuous small crops in the South would only cause other countries to increase their own acreage. Our aim should be to grow more cotton on fewer acres, thereby cutting the cost of production to the minimum, also to steadily improve the length of the staple. By this method the South will continue to dominate the world's cotton market and American mills will be assured of ample supplies of better quality cotton. Such a course places responsibility squarely upon the shoulders of the cotton grower. The major problem is to inculcate in the minds of the individual cotton farmers the thought that on their concerted action rests the prosperity of the cotton-growing industry of the United States.

## Industrial Opportunities

**I**N the major industries of cotton, tobacco and lumber manufacture the South has won a place of leadership and is now supplying much of the nation's output of such products. While the South has some 200 miscellaneous industries manufacturing a great variety of goods, by no means does it begin to supply the demands of its own people. In practically every line of industry, the South could utilize to advantage the products of local plants, were they established within its borders.

The South needs more textile plants producing finished fabrics, more garment factories, more factories turning out shirts and other wearing apparel.

In the processing and preserving of foodstuffs, the demands of Southern consumers offer sales opportunities for local factories of average size to supply local requirements. These should include packing plants, vegetable and fruit canning factories and plants for the manufacture of bakery, confectionery and dairy products.

There is room for the establishment of wood-using industries, metal working plants, leather goods factories, clay-working plants, factories making electrical fixtures, plumbing supplies, roofing, glass, buttons, brooms, brushes, soap, chemicals, disinfectants, paint, paper products, rubber goods, and hundreds of finished commodities that form the basis of commerce.

Georgia buys each year from other states some \$400,000,000 of food products and commodities that should come from within its own borders. In the Carolinas, the Duke Power Company estimates that



goods equal to the output of 584 manufacturing plants in ten classes of industry are brought in from distant states. As typical examples of present needs not adequately supplied by local or nearby manufacturers, it is stated that although there are a number of packing plants in successful operation in the Carolinas, 50 additional packing plants and abattoirs of average capacity are needed in the State to supply fresh and preserved meats. Although several shirt factories are operating successfully, it is claimed that 32 shirt factories of average size are needed to make the \$8,000,000 worth of shirts brought into the Carolinas each year. Twenty leather goods plants of average size it is believed would not be able to meet the full requirements for leather goods in the Carolinas. One hundred canneries could thrive, supplying the present Carolina demand for canned fruits and vegetables now shipped in from other states. Many other industries are cited as being needed to supply local demands.

The combined population of North Carolina and South Carolina is 4,907,671. The 16 Southern States have a population of 41,248,620, and as many other Southern states are not as highly industrialized as the Carolinas, it is evident that there is a great opportunity for the establishment of local factories within the South to supply local needs.

### Tests for Southern Legislatures

THE fact that the Legislatures of 12 of the 16 Southern States will hold sessions this year, 11 in January and one in April, is of much importance in these economically and politically unsettled times. More than usual precaution against unwise legislation must be taken, and sound constructive legislation must be encouraged.

On economic lines, it may be cited that the present budgets of these 12 states aggregate approximately \$280,000,000. The political or legislative phase of the situation involves proposed measures of deep significance to industry and business in the South. In North Carolina, for example, it is announced that at least a dozen organizations of various interests "will participate actively, both directly and indirectly, in the now well developed campaign for modernization of labor and related laws."

As an outstanding manufacturing section of the country, the South already is the target at which labor agitation is aimed. The class discrimination which organized labor has obtained from Congress, as in exemption from Anti-Trust laws, may be sought from individual Southern States. The greatest deterrent to such legislation will be the enactment of sound laws for amelioration of any unfair or harmful labor conditions which may be found in any industry or area. The labor of the South, in factory and field, must be continued free and independent and American. Also, defense against communism must be strengthened all along the line.

Economy in the preparation of state budgets is a

point to be nicely adjusted. Indiscriminate curtailment of expenditures may in some ways prove as harmful as extravagance, against which every precaution must be taken. The problem of taxation, which confronts several states, calls for the attention of legislators and the people at large.

The great dangers to be faced in the framing of contemplated legislation are demagogism, class agitation and sentimentalism.

### \$20 Per Room Per Month

PLANS for more low-rental apartment houses in New York, specifically for the benefit of the so-called "white-collar" men and women are of interest beyond the significance of these apartments as real estate enterprises or because of their architectural design. The latest plan proposes to erect apartments renting at \$20 per room per month, and while this price is substantially lower as compared with the enormous rental of most apartments in New York City, it is still too high to benefit the majority of office and store employees.

Some years ago the Metropolitan Life Insurance Company built apartments in New York to rent at \$8 per room per month, giving first choice to its employees, and it is reported that at this rate the company earned more than 6 per cent on its investment. John D. Rockefeller, Jr., has erected similar low-rental apartments.

The Charleston News and Courier, under an editorial headed "Mitigation at Best," says:

"The Grand Street apartments, built under the auspices of the State housing board of New York excite the admiration of New York newspapers. There is a big inner courtyard with fountain and plantations, a baby wagon garage, electric ice boxes, tiled baths and garbage incinerators. The maximum rental is \$12.50 a month a room.

"In the better cotton mill villages of South Carolina (there are some dozens of them) more comfort can be had for a dollar a month a room. There are no tiled baths but there is running water, the houses are warmed from open fireplaces, there is no elevator service—none is needed for houses of one story—and each house has from 3,500 to 5,000 square feet of ground, sometimes much more, in the lot it occupies. The auditorium is in easy walking distance.

"The most that can be accomplished in housing a crowded city is mitigation of the discomforts inseparable from it."

Approximately 2,000,000 men and 1,500,000 women are employed in the clerical group of workers, not counting those in Government service. Nearly 225,000 women are at work in white-collar positions in the transportation service. White-collar workers toil faithfully in banks and other business offices, behind the counters in stores and elsewhere. Numerically and in morale they contribute to the stalemindedness of the country.

Largely by birth, upbringing and education, the white-collar men and women seek a sound standard of good living, with comfortable homes and favorable home surroundings, and above all they desire opportunities for advancing their children's welfare.

# Status of The Highway Industry

By

CHARLES M. UPHAM

Engineer-Director,  
American Road Builders' Association,  
Washington, D. C.

Tank-truck distributors  
cover many miles of  
highways daily.



**P**UBLIC confidence is the basis of American prosperity. It is the basic factor underlying the continuance of highway activity. The knowledge that expenditures are made wisely is a necessary stimulant for increasing investments in highways. The public wants to know that highways are located correctly and that the complete operation of construction and maintenance is carried on according to modern business and engineering methods.

Highway construction has not kept pace with transportation demands. Retardation of the present highway and street construction and improvement programs will result in higher transportation costs. The greater expense to the public would more than pay the cost of the needed improvements.

The motor vehicle industry has flourished in a large measure because of the roads, and in turn, the financing of highways has been facilitated by the increased revenue from

vehicle taxes. Without expansion of the highway program, the cessation of this healthy interaction is sure to result. Full development of public wealth in

exorbitant and can be increased in the states having a low rate without working a hardship on the vehicle owner.

Greater expenditures of public funds

for highway purposes can best be accomplished by increasing public confidence in the management of the industry. This, in turn, is dependent on increasing activity along educational lines, which alone can eliminate the waste of funds and promote further improvement in management and correct practice. That this basis is sound is unquestionable and has been proven by numberless great industries. The manufacturing of highways differs but little from the manufacturing of other products; therefore all research and educational activities should be encouraged. With highway management approaching in efficiency that of the suc-

## Good Roads Values

**"T**HE value of good roads cannot be expressed in money. Like all other good things, hard surfaced roads have immense collateral values. Collateral advantages and intangible values spring up around every useful enterprise. To this rule there are no exceptions, and good roads form a particularly happy illustration of its truth.

"Good roads answer the need of humanity for one of the three essentials of organized society—food, shelter and transportation. And roads serve all three. Good roads are lines of easy transportation and communication. They relieve the tedium and isolation of the country, and offer the blessings of rural life to the city worker. They form lines for the development of community interest. They foster and create community development; bring educational and recreational values to dwellers in the city and country alike; develop national and state patriotism."

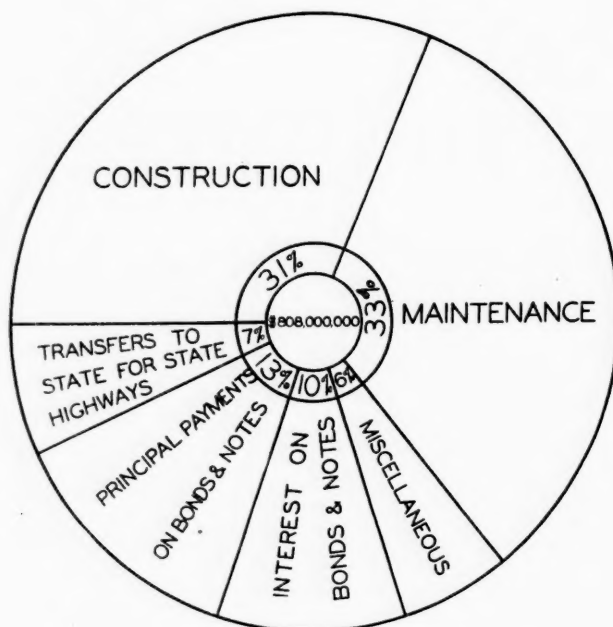
ARTHUR M. HYDE, Secretary,  
U. S. Dept. of Agriculture.

many states is retarded by the lack of highway transportation facilities.

The gas tax as a road toll or use charge has not generally been considered

successful private corporations, funds for improvement should be doubled and an enormous growth and expansion of the associated industries would result. The

Distribution of Local Highway Funds  
1929



recognized basic principles underlying the highway industry are not essentially different from those of private enterprises. The wise expenditure of public funds depends entirely on whether these principles are followed or ignored. It has been proven beyond question in many states that huge sums may be expended for highways under business management without wasting funds. The investments have proven very satisfactory from the standpoint of decreased transportation costs and general increase in wealth and prosperity. Knowing that this condition exists in certain sections of the country, and realizing that expenditures for highways wisely spent has a healthy reaction, there is every good reason to expand the highway system.

Statistics showing percentage of traffic on various highway classifications are of interest. A survey made in several states by the U. S. Bureau of Public Roads indicates that from 75 to 90 per cent of vehicles operating on state highways are city owned. Therefore, it is evident that rural landowners should pay but a small percentage of the cost of these highways.

As an indication of conditions existing concerning traffic concentration points, the following percentages are given for the purpose of showing that each state has individual problems to solve in allocating funds to meet traffic requirements. In California 26 per cent of the vehicles registered are owned in Los Angeles. In Michigan 31 per cent of the vehicles registered are owned in Detroit. In New York 33 per cent of the vehicles are owned in New York City.

retarded by congestion and lack of adequate highways in large cities. This is evident from recent traffic analyses. Based on the car ownership in Detroit, which has 3.5 persons per automobile and where highway facilities for getting in and out of the city quickly are adequate, the automobile ownership in New York City, Chicago, Philadelphia and Boston is evidently suffering by reason of lack of exits, high speed arteries and regional highways. Boston has seven persons to each automobile. Philadelphia and Chicago have nine persons to each automobile. New York has ten persons to each automobile. Wayne County, in which Detroit is located, has 400 miles of 40-foot pavement giving a good outlet for city traffic. Los Angeles, which has good pavements within and without the city, has an automobile to each 2 1/4 persons.

Using the Detroit per capita ratio of 3.5 persons to the car as a basis, New York City should have

Chicago has 26 per cent of Illinois' total. Boston has 18 per cent of the registration in Massachusetts, and Philadelphia has 17 per cent of the registration in Pennsylvania. It is evident that areas such as these should be given preference in distributing funds for the purpose of overcoming congestion adjacent to and possibly on the through routes in these centers.

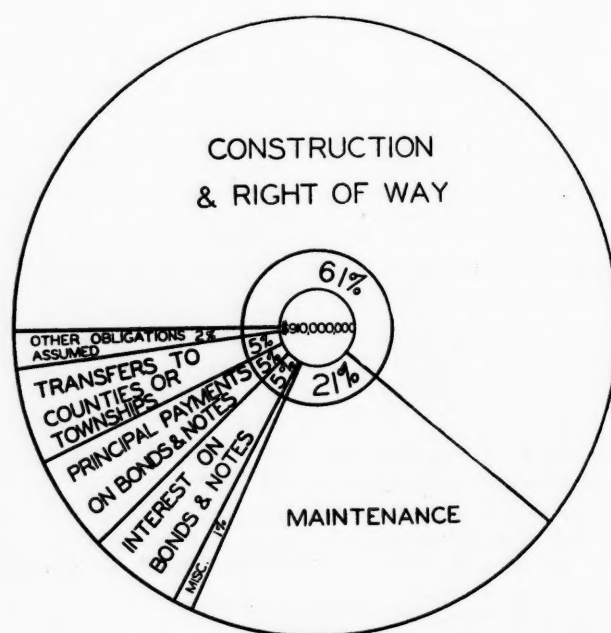
Highway transportation and automobile registration have been

1,500,000 cars instead of 560,000. Chicago should have an additional 535,000 cars, Philadelphia 360,000 more and Boston 115,000. That these cities are lacking in high speed arteries, afflicted with narrow pavements in the regional area and insufficient city exits is evident. These conditions, coupled with some rough riding city pavement, are accountable in a great measure for the existing low car ratios, and present an urgent need for regional development and an immediate program of improvement in this field.

The fact that many city streets have become too rough for comfortable riding has placed the traffic burden on a few main arteries, thereby causing congestion and difficult driving. This has discouraged many potential car owners from buying cars as they do not wish to drive under existing traffic conditions. Numerous outlets of a minimum width of 40 feet will help solve the problem.

#### Forcing Highway Development

THE CONDITIONS EXISTING in the cities regarding highway mileage, automobile registration and transportation are much the same in many states and counties. Where highway construction has been wisely planned and carried out automobile registration has shown a rapid increase. With any decrease in construction activity, automobile registration could be expected to show a corresponding decrease. Inasmuch as vehicle taxes used for highway construction and maintenance in 1929 amounted to \$779,477,543, which is 45 per cent of the total expenditure on roads outside



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Distribution of State Highway Funds



of cities amounting to \$1,718,199,895, the necessity for meeting the demands for motor vehicle transportation is plainly evident in order to continue this activity.

Quoting data from the National Automobile Chamber of Commerce, the proceeds from gasoline taxes increased from zero in 1918 to \$431,311,519 in 1929 and are estimated at \$515,000,000 for 1930. The proceeds from automobile registration increased from \$51,000,000 in 1918 to \$347,843,548 in 1929. In 1921 the motor vehicle owner paid 12 per cent of the total highway bill and in 1929 he paid 45 per cent.

Expenditures on city streets as determined by the U. S. Bureau of Census for 1928 were \$389,688,125 for new construction and \$158,835,487 for maintenance, a total of \$548,523,612 in cities of 30,000 population and over, about 35 per cent of the population of the United States. Expenditures in cities of less than 30,000 population probably amount to almost as much, making a total for all cities of probably \$1,000,000,000.

The total expenditures for roads and streets in the United States in 1929 approached \$2,600,000,000—a huge industry.

Funds from other than motor vehicle sources have not increased to any extent, and therefore under present conditions increase in highway expenditure is dependent on increase in motor vehicle registration and gas tax not only for current funds but for bonding operations.

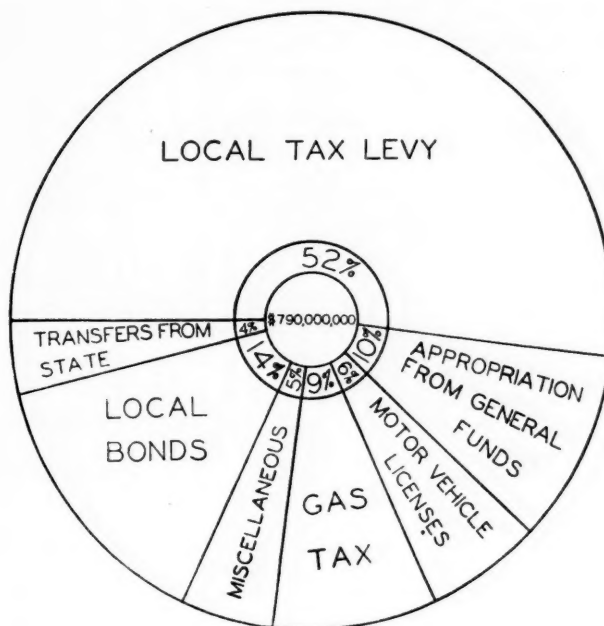
#### Universality of Gas Tax

A GASOLINE TAX IS NOW in effect in all of the states and District of Co-

lumbia. It ranges from 2 to 6 cents. There is little opposition to this form of road toll, although there are some localities where the tax is being used for other than highway purposes. Fifteen states are using the gasoline tax for purposes other than the improvement of state and rural highways. In several instances gasoline taxes have been placed in general funds and found their way into uses other than roads. This is a violation of the principle of the road toll, and if broadly adhered to might become injurious to a now unobjectionable form of highway taxation.

The argument has been presented in some localities where the gas tax is in effect at a maximum figure, that at a rate of 4 to 6 cents, the tax percentage of the filling station price is too great. Looking at the situation from the standpoint of car upkeep and per capita share of highway costs, the expense even at the maximum rate constitutes a very low road toll. Grouping the states according to their respective gas tax rates, the average annual tax paid by the individual automobile owner is as follows: The car owner in the 2-cent group pays \$9.63, the 3-cent group pays \$13.85, the 4-cent group pays \$21.34 and the 5-cent group pays \$22.43. The average for the total amounts to \$15.09 per car owner. Even the maximum is a low toll from the standpoint of a highway tax and as a percentage of cost of car operation it is negligible.

Source of Local Highway Income  
1929



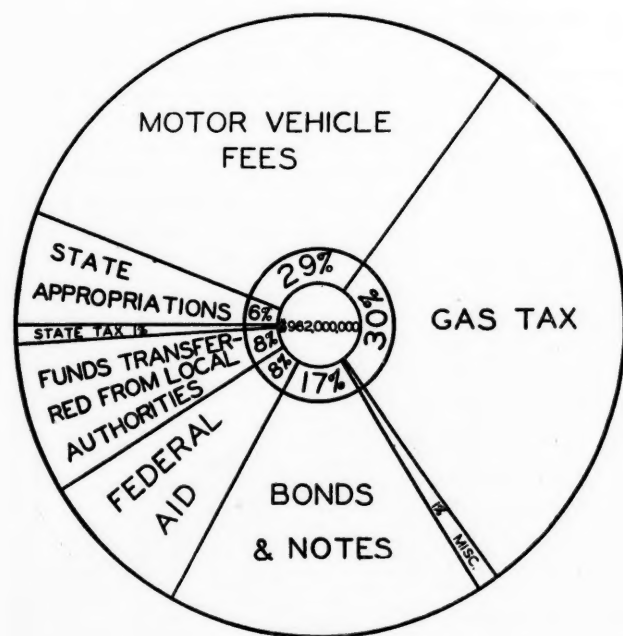
The automobile owner pays annually in license taxes an average of \$13.09. There are some 14 different methods by which this is levied. In 14 states horsepower rating is used, and in 12 states, net weight only is considered. The other states either use combinations of these, or methods of their own such as flat rate, value in pounds, actual value, cost price, cubic-inch displacement, etc. The necessity for uniformity is evident as most of the states in the same groups obtain nearly the same results. Simplicity of method is greatly to be desired.

The automobile property tax has been eliminated in 14 states and might well be entirely abandoned, since this tax, in most instances, is not used for highways.

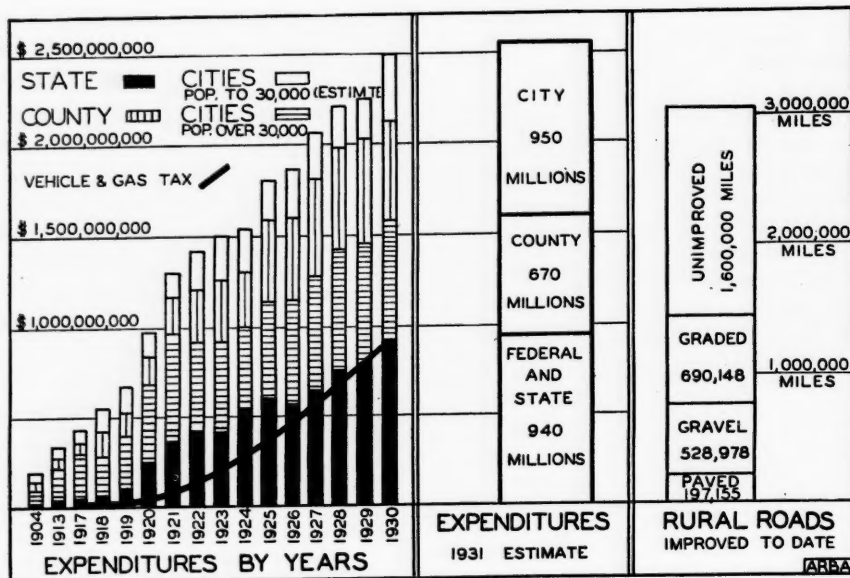
#### Road Bonding Practice

BONDS FOR HIGHWAY purposes have been issued in 32 states. Although some of these have undoubtedly violated good financing principles, there is no instance where the extension of credit has failed to react advantageously for the state. No instance exists where state credit has been adversely affected by bonding. The interest and retirement of both state and county highway bonds are quite generally dependent on automobile taxes. The healthy reaction in vehicle registration resulting from rapidly and well constructed highways has in every instance made the investment a very profitable one. That many of the remaining states could improve their condition in every respect by this method of financing is unquestionable.

Highway bonding by counties has been



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Source of State Highway Income



adopted in every state, except North Dakota. In some states the county funds received in this manner have been turned over to the state and spent under the supervision of the State Highway Commission. This condition is the result of confidence inspired by efficient state highway departments with organization, plant, and equipment suitable for modern construction and maintenance. The state highways, however, are the obligation of the state and should operate with state funds. County funds used on state highways exhaust the credit of the county and curtail the development of the rural highway.

#### Necessity for Knowledge

COUNTY HIGHWAY construction, finance and administration present a broad field for study and investigation. Until the problems confronting many counties are solved by application of educational information, funds for highway improvement will be lacking and the neglected and much needed farm-to-market highway will be slow in materializing. There are 3,000,000 miles of rural highways in this country, 660,000 miles of which are improved to some extent. Less than 25 per cent of the surfaced mileage is paved with hard surface types. There is a huge program for the road builder which precludes the idea of over-expenditure on highways for a long time to come.

Outstanding and urgent highway needs include grade separations at important intersections, high speed by-pass arteries around heavily populated centers, the elimination of road and street "bottle necks," the construction of more city exits and entrances, and widening programs in the vicinity of large cities. Rural highways have been neglected and effective financing and development plans must be devised for farm roads.

The Bureau of Public Roads conservatively estimates highway expenditures outside of cities for 1930 to be over \$1,600,000,000. Automobile registration for 1929 was 26,501,443. When the figures on expenditures are compiled for 1930, they will show a big increase.

Highway expenditures are steadily increasing, due in a large measure to good roads information distributed by the government, national organizations and colleges. Steady and persistent effort was necessary in the beginning to place before the public the economic side of highway building. It is even more necessary now, to show that the vast sums being expended are bringing returns through low transportation costs and other economic savings.

#### Benefits of Highway Research

THE HIGHWAY CONSTRUCTED today is better and costs less than the highway of a few years ago. Increased production and research have brought good results and this is only the beginning; that greater activity in highway research would react beneficially is unquestionable, and it would indeed prove costly to the industry to allow any relaxation in the educational program. A certain corporation in this country is expending \$1,000,000 a day on expansion. It has in its research laboratories 3700 men. The product of this corporation has been greatly improved in recent years and is gradually decreasing in cost. As a result, the sales of the product are showing an extremely rapid increase which is reflected in the earnings of the company. It is needless to say the company has no difficulty in securing public funds for further expansion.

Continued growth of the highway industry is dependent on improved practice and the distribution of good roads

information, and this is only possible through educational channels. The field of activity for good roads organizations is unlimited and the benefits accruing to the industry and the public through further expansion of highway improvement are largely dependent on these associations. There is much excellent information written daily on the subject of highway improvement. There is a great necessity for the correlation of this information and a much wider broadcasting. The nationally known highway educational organizations serve the entire industry to the greatest advantage in carrying out this work.

#### Pressing Demands for Increased Roads Program

There is one automobile for each 4.23 persons in the United States, according to figures recently announced by the American Motorists Association.

The figures are based upon total motor vehicle registrations of the United States compared with the revised 1930 census figures, officially announced by the U. S. Census Bureau on November 22, as being 120,623,993, exclusive of census figures of Porto Rico, Hawaii and other foreign possessions.

The population per motor vehicle in 1929 was 5.3 persons per car, the computation being based upon 1920 official census figures, plus an estimated increase in population between 1920 and 1929.

"The per capita population per motor vehicle, aside from being interesting, serves to illustrate the pressing demands for an increased highway program at least commensurate with increased motor vehicle registrations which at the present time total approximately 28,509,000 passenger cars and trucks," declares J. Borton Weeks, President of the A. M. A., in commenting on the figures.

Following are the Association's figures, showing the 1930 population per motor vehicle in each state:

State	Population per car	State	Population per car
Ariz. ....	3.52	N. C. ....	6.30
Ala. ....	8.77	Neb. ....	3.09
Ark. ....	7.37	N. D. ....	3.36
Colo. ....	3.21	N. J. ....	4.45
Calif. ....	2.64	N. H. ....	4.04
Conn. ....	4.63	N. M. ....	4.65
Dist. of Col. ....	2.76	N. Y. ....	5.15
Del. ....	3.88	Nev. ....	2.49
Fla. ....	4.24	Okla. ....	3.93
Ga. ....	7.29	Ore. ....	3.28
Ill. ....	4.42	Ohio ....	3.52
Ind. ....	3.56	Penn. ....	5.28
Iowa ....	2.95	R. I. ....	4.83
Idaho ....	3.47	S. C. ....	7.07
Kans. ....	2.99	S. D. ....	3.19
Ky. ....	7.23	Tex. ....	3.93
La. ....	7.06	Tenn. ....	6.00
Mich. ....	3.14	Utah ....	4.00
Mo. ....	4.53	Va. ....	5.85
Minn. ....	3.25	Vt. ....	3.60
Md. ....	4.60	Wash. ....	3.24
Miss. ....	7.91	W. Va. ....	6.04
Me. ....	4.06	Wis. ....	3.59
Mont. ....	3.47	Wyo. ....	3.46
Mass. ....	4.67		



# The Service Value of a Road\*

By

W. A. VAN DUZER

Assistant Chief Engineer,  
Pennsylvania Department of Highways,  
Harrisburg, Pa.



Some states in the North and West expend \$500,000 annually for snow removal, and find this a good investment

**T**HE value of an improved road is measured by its services to the tax payers. Some services are direct, others indirect; and of the latter, perhaps the most far-reaching are the following: Service 365 days a year; service as a reserve transportation system in case of railroad systems being tied up by strikes or otherwise; service as a military transportation system in times of war; increase of social and recreational possibilities of both city and rural populations; increase in the range of marketing in respect to both distance and favorable selling periods; tendency to increase land values. Such factors are difficult to evaluate and add their bit to the complexity of the why and

wherefore of highway expenditures. This, however, is only another term for the economics of road building, two phases of which: transportation costs, time loss and inconvenience to the users of the road during the construction period, are to be discussed later.

The direct service value of an improved road may be measured by the saving it effects in the cost of motor vehicle operation, and is significant in its comparison with the annual net cost of the improvement. There is also service value in reducing grades and curves,

in avoiding various bottleneck conditions, and in reducing accident hazards.

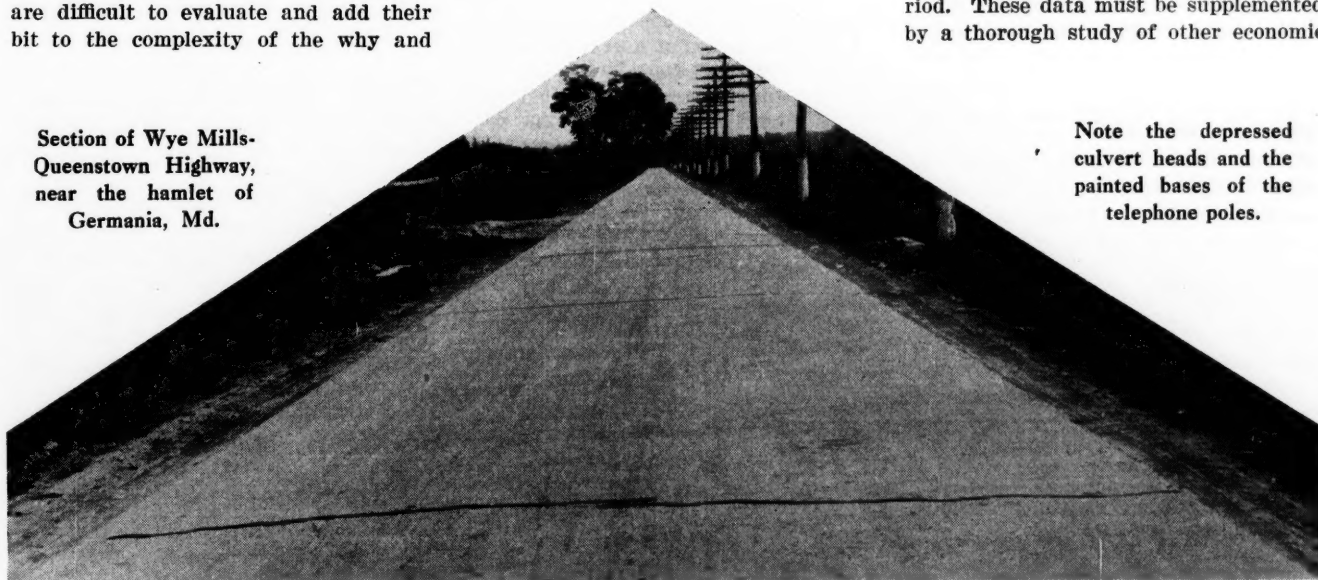
## *Essential Economic Facts Required Concerning Traffic*

**I**N DETERMINING the increased earning power of an improved highway over an earth road, the following well-known factors must be studied:

### *Average Daily Vehicular Traffic During the Estimated Life of the Improvement*

Studies must be made of the probable traffic that will have used the road at the expiration of a five- or ten-year period. These data must be supplemented by a thorough study of other economic

Section of Wye Mills-  
Queenstown Highway,  
near the hamlet of  
Germania, Md.



Note the depressed  
culvert heads and the  
painted bases of the  
telephone poles.





A 145-inch wheel base  
Autocar tractor, and an  
eight compartment  
Davis tank

The 2500-gallon tank is  
mounted on a Model  
A-278 Freuhauf drop  
frame, semi-trailer

factors as they may affect transportation within the service zone of the improvement. Correlation of all these facts will permit a safe forecast of traffic trends throughout the economic life of the improvement.

#### **Saving in Operation Costs**

The traffic survey will determine the percentage of pleasure or business vehicles and trucks that will use the proposed highway. From this, study of the approximate saving per mile throughout the economic life of the improvement can be made.

#### **Saving in Time and Distance**

The time-saving factor may apply not only to the vehicle, but to occupants as well. The value of a vehicle-hour is easily determined by resorting to prevailing rental rates in the service zone as applying to the types of vehicles using the proposed improved highway. A traffic survey and study of conditions motivating the present and expected errands of car occupants may suggest assigning a value to time saved by them. The saving in distance is easily converted into terms of dollars by assigning the proper operating cost per mile to each classification of vehicle as determined by the traffic survey. Under operation costs may properly come all charges incident to vehicle upkeep and operation.

#### **Elimination of Hazards**

The improvement is presumed to be of such a nature that it will do just that—not only for the present but for the future as well. This is its fullest justification. The measure of added service created by substituting safety for danger is difficult to express or agree upon. However, the principle that nothing is of more value than human safety should apply and usually will justify the ex-

pense for present and, in a large part, future requirements as well.

Other factors, of course, may be mentioned as influencing the increased earning power of an improved road. They may include the added mileage-life of the vehicle served by the improvement; the added comfort and convenience of the user; the assurance of continuity of service under all conditions and kinds of weather; and the increased value of abutting property served by the improvement. These are usually difficult to evaluate and, therefore, can only be mentioned in the discussion.

#### **Economic Factors Applying to Surface Types**

**W**HEN SELECTING or considering any type of surface economically advisable, the following procedure in the determination of comparative facts has been found most satisfactory:

- 1—Determination of traffic-density limits for each type under consideration.
- 2—Determination of average economic life of types under consideration.
- 3—Determination of road metal cost (surface and base) for each type considered.
- 4—Determination of surface treatment cost for each type as required during the economic life of the most durable type included in the comparison.
- 5—Determination of resurfacing costs for each type estimated as required during the economic life of the most durable type included in the comparison.
- 6—Determination of general repair costs for each type as required throughout the estimated economic life of the most durable type included in the comparison.

\*Address presented at November, 1930, meeting of American Association of State Highway Officials at Pittsburgh, Pa. Also published in January, 1931, Convention Edition of American Highways.

With the above data at hand, one can proceed to select what appears to be the type best fitted economically for the project in question. The annual fixed charges per mile for each type of road under comparison, each completely charged off in a given number of years, are readily obtainable. It has generally been found desirable to use a depreciation period equal to the economic life of a rigid type of pavement. This cost comparison should, however, be limited to roadway surface and should exclude grading and drainage costs. These costs should enter into the final economic analysis as to whether or not any particular type of surface is justified. The total annual charges per mile as applying to roadway surface would necessarily be made up of fixed or carrying charges and maintenance charges as required to maintain each type-surface under consideration in the same state of serviceability during the period the investment is being depreciated.

#### **Comparison of Increased Cost With Expected Earnings**

**T**HERE YET REMAINS the problem of estimating whether the annual increased cost of the improved road to the public (i. e. fixed, plus maintenance charges) will be less than, or exceed, its increased earning power. On this comparison will finally hinge the selection of economic type of road surface. This analysis should always be made by one thoroughly familiar with conditions within the service zone of the improvement. The probable traffic trend, both as to volume and character, must be forecast with all facts at hand. This expected analysis, if made in this fashion, will determine the average daily traffic throughout the entire economic life of the improvement.

From annuity tables the annual depre-

### A Diamond T Six-Wheel Heavy Duty Truck

Exhaustive tests show that the six-wheel vehicle, although heavily loaded is kind to improved highways. Moreover, it easily negotiates irregularities in surface.



ciation charge, including interest on the investment, is readily obtained as applying to the economic life of the pavement-type under consideration. To this must be added any increased maintenance charges as required to maintain the surface in first class condition throughout the economic life chosen for the study. Should the annual maintenance costs be less, a corresponding deduction would be made from the fixed charges.

Grading and drainage investment must be included in *this* comparison. It should be considered separately from the surface investment, however, and in most cases might fairly be depreciated over a period of forty years.

The total annual fixed charges are those obtained for the period of economic life of the type in question. By referring to the Economic Factors Applying to Surface Types, as previously outlined, the proper annual maintenance charge can be obtained and included in the total annual carrying charge. We have now ascertained the total additional annual cost of the improvement to the public. Concisely expressed, it is equivalent to annual fixed charges for road surface and base, plus annual fixed charges for grading and drainage, plus the algebraic increase in annual maintenance cost. From the studies as outlined, they are all obtainable.

When measuring the increased earning power of an improved road, the traffic survey again becomes the starting point, for it should include a classification of vehicular traffic using the road. From these data the percentage of pleasure or business cars and of trucks is ascertained. The saving in operating costs for each vehicle classification when operated on an improved hard surface, as compared with earth roads, has been fairly well established by experimental study, and placed on a mile basis for each vehicle type.

In Pennsylvania as a whole, it aver-

ages conservatively about \$10.00 per year per mile per average daily motor vehicle using the road. We arrived at this \$10.00 per year by the average saving on all vehicles per mile of 2½ cents, which multiplied by 365, will give \$10.03. This figure will vary somewhat as the traffic survey varies and with a saving in specific time and distance factors as obtained. The saving in operating cost of an automobile on an improved road over an unimproved road has been determined as 2½ cents per mile, while the saving on trucks has been determined as 5 cents per mile. Of the traffic on the roads in Pennsylvania, 90 per cent of it consists of automobiles, and 10 per cent of trucks; which would give an average saving per mile of 2½ cents.

To express the same proposition by a formula, we have

X = Length of newly constructed surface in miles.

Y = Future annual daily average traffic.

Z = Reduction in traffic operating cost by improvement of surface, expressed in dollars per year.

$$Z = 10 X Y$$

As an example, if the average daily

traffic of a road is 300 vehicles a day, it would be economically wise to place a surface on this road that would cost an amount not to exceed \$3000 per mile, per year as carrying charge, interest, and maintenance. This \$3000 per mile is a measure of surface value. The justification of grading and drainage are to be figured with reference to special conditions of each improvement.

### Planning and Controlling Construction

ASIDE FROM THE ECONOMIC justification of type of improvement, the motor vehicle owner is equally concerned with the manner of planning and controlling the work. Its prosecution must necessarily affect him in many ways. He willingly helps finance the improvement, but he loudly objects to inadequate traffic service, prolonged construction activity, unsatisfactory detours, and deprivation of access to his or other trading districts. These factors are of great economic importance to him. They require study and the application of modern and proved means of remedy as good engineering permits.

We have found that increased production efficiency has resulted by specifying shorter working schedules. More careful control and supervision emphasizing the importance of avoiding lost time intervals has also had a very gratifying effect in Pennsylvania. As a result, contract work has been greatly speeded up during the present year, thereby giving the motor vehicle owner the benefit of earlier use of his investment.

### Traffic Accommodation

THE DETOUR IS FAR LESS objectionable when its length can be reduced to definite economic limits as determined by the economic relation between length of detour and volume of traffic. A study of any individual project will reveal when it becomes advisable to direct traffic over the construction project due

### A White Truck on a Bus-Type Chassis

Motor trucks to-day must not only carry heavy loads, but must maintain schedules as fast as motor bus operations, in the field of motor transport. "Time is money."





either to traffic volume to be served or length of the suitable detour, or both. Again the detour enjoys more favor when it is maintained according to the same standards as the State highway, and when it is made safe and free from confusing or doubtful turns.

These questions have been carefully studied and yet it is surprising to learn how expensive detours are at the best. Last year the detours in Pennsylvania were 819 miles longer than the highway for which they were substituted during construction. The average daily traffic using this detour mileage was 825 vehicles for a period of about 120 calendar days. Using 14 cents as the average vehicle mile cost of operation, including time loss, we find the public not only financed road improvements, but also spent about \$11,350,000 in additional operation costs with nothing in return. Had it been possible to use this huge sum in building roads, over 200 additional miles could have been constructed. Doubtless this problem is more serious in Pennsylvania than in some other states having less mountainous territory and less traffic. However, the motor vehicle owner is intensely interested in its economic aspect. The highway engineer must study it and apply methods of solution. It is a matter directly related to the improvement.

It has been demonstrated that highway improvements in a majority of cases can be advantageously carried on by permitting traffic on the project during construction. Half-width pavement construction is frequently more economical than a detour, but again the traffic using the road is a fact to be considered; i. e. the time loss to the vehicle on account of half-width construction must be evaluated. Where traffic is heavy and road surface maintenance costs run high, we have found it better to provide half-width, high early strength concrete to permit traffic to have the advantage of its use on the day following pouring. Traffic delays are greatly minimized under this plan. Greater safety and less confusion results. Congestion along the contract disappears, thereby giving construction activity a free hand.

Important highway intersections; bridge construction; overtaxed parallel highway routes serving as traffic detours; continuous access to business districts and developed residential areas; guaranteed accessibility for fire protection; riddance of traffic hazards, delays, and disorganization, are all problems of economic importance. The highway engineer must solve them to defend himself as a public employee. This can be accomplished largely by proper economic planning and control and by the use of time-saving construction methods.

It may be of interest to mention that

the Pennsylvania Department of Highways is now engaged in building a cutoff for the Lincoln Highway at East Pittsburgh. This project is about two and one-half miles long and will cost about \$4,000,000. It will avoid a long 10 per cent grade and a series of narrow and congested streets. It will mean a reduction in distance of one-half mile and an average saving in traveling time of fifteen minutes per vehicle. It will make possible a 50-foot paved roadway with no cross traffic or other hazards while the present circuitous and dangerous location will permit only a 28- or 30-foot roadway. By applying average measures of value of motor vehicle operation costs and time loss to the daily average traffic to be served, assuming the average fu-

ture daily traffic will be 18,000 vehicles per day, we have a saving of about \$460,000 per annum, and the improvement will have paid for itself in less than nine years. If consideration is given to the saving in time of the motorists, at one dollar per hour per vehicle due to overcoming the congestion, which is conservatively estimated at fifteen minutes per vehicle, we find that we have the stupendous saving of \$1,500,000 per year, which, added to the saving due to the shortened distance for the same amount of traffic, would mean that the improvement would pay for itself in about two years. And yet, the economic life of the surface is estimated at twenty years, while the life of the grading and drainage investment will last indefinitely.

## Road-Building Machinery Exports Increase

**R**EFLECTING the general progress which the world is making in improved highway building, exports of road building machinery from the United States during the first ten months of 1930 continued the steady growth of past years by exceeding the total for the corresponding period of last year, according to the Industrial Machinery Division, Department of Commerce.

Exports for the ten-month period of the current year were valued at \$2,973,000 as compared with \$2,849,000 for the similar period of 1929. The values for the separate classes entering into this trade were as follows: 1929 period, road rollers \$273,000, road graders \$801,000, other road-making equipment \$1,774,000; 1930 period, road rollers \$294,000, road graders \$968,000, other road-making equipment \$1,711,000.

Canada has been the largest and most rapidly growing outlet for United States road-making machinery. Canada's lead was greatly increased in 1928, when it purchased equipment valued at more than double that of the next largest market. In 1929 the Canadian purchase reached abnormal volume, valued at more than six times that of Argentina, the next most important customer.

Available statistics do not segregate expenditures by provincial governments from expenditures by countries or municipalities. However, in the Maritime Provinces and in British Columbia it is known that most of the mileage was constructed from provincial funds. Some indication of the types of machinery re-

quired may be gained from the fact that 54 per cent of the total construction in 1929 was of loose gravel and crushed stone and 30 per cent was improved earth road.

For the years 1925 and 1927, the latest for which production figures are available, the United States exported 5 per cent and 8 per cent respectively of the total value of its domestic production of road-making machinery. The totals for these years were as follows: Production, 1925, \$26,297,000; 1927, \$27,728,000; exportation, 1925, \$1,430,000; 1927, \$2,218,000. The 1927 production comprised the following: Road graders \$15,554,000, road rollers \$4,262,000, stone crushers \$3,387,000, and other road making machinery \$4,525,000.

Following these years the exportation of this class of machinery rose considerably amounting to \$2,802,000 in 1928 and \$3,140,000 in 1929. Latin American markets have played a prominent part in the expansion of these exports. Argentina, Uruguay, Mexico, Chile, Brazil, Cuba, Venezuela, Costa Rica, and Colombia figuring among the thirteen largest markets in 1929. Cuba was the only important market in the West Indies.

Argentina which is one of the few important Latin American countries that have not yet established a definite road building program, leads South America in purchases of road machinery. With less than 500 miles of first class hard-surfaced automobile roads, Argentina leads all Latin America in automobile registration.





# GASOLINE TAX DIVERSION

## Endangers Road Progress

By  
H. H. RICE

Chairman, Taxation Committee,  
National Automobile Chamber of Commerce,  
New York City

**F**ACED by an insistent demand for employment as well as the always present urge for improved roads, highway engineers all over the United States are now preparing for the greatest construction year in road history.

Whether they will accomplish their objective, however, will depend not alone upon their ability as administrators and builders, but upon the comparative success of a growing menace to the highway program—the gasoline tax grabber.

Almost from the beginning of the operation of this tax as a means for road development, the tax grabber has been in evidence. Now he has secured a

toehold just at the moment when highway departments most need funds because of the drive they have already made to get work under way, in response to the request for greater employment.

Unless state legislatures curb his activities this winter, thirteen state highway departments will be faced by a shortage of funds with which to meet Federal Aid, and by just so many dol-

lars they are short, the program for unemployment relief will have to be curtailed or funds found elsewhere.

Equally or more important in the long run is the loss which will accrue to the public through inadequate transportation facilities if road work slows down.

A fair definition of the gasoline tax grabber is that he is the man, who





A Well Maintained Gravel Road in Missouri

Roads of this type keep traffic moving the year round in many sections of the country

for one reason or another seeks to divert to other uses the special taxes which the motorist has voted upon himself for the sole purpose of aiding motor highway development.

As long as the amounts raised from these levies were not large, he had little or no success.

Today the gasoline tax has grown to the enormous figure of virtually \$500,000,000 a year, an increase which has been due not alone to the annual swelling in motor vehicle travel, but to an increase in the amount of the tax paid by the motorist.

Of this, the tax grabber has pinched out \$12,500,000, which is a small sum only in proportion to the total. His plans, if carried through in the states mentioned, would expand the amount several times.

Only concerted action by all who are interested in maintaining the motorists' equity can check this drive.

#### Size of Gas Fund Attractive

**T**HE DEMAND for diversion is not easily resisted unless the full background of highway finance is understood. The grabber's argument is an appealing one. The motor vehicle fund is large. It is easily collected. There is little or no resistance to the tax, not because it is popular, but because the man who pays it has seen a direct return in dollars and cents from the roads it has provided. Land taxes are high. The pressure for public work is great.

Further, many of the purposes for which diversion is asked will appeal to the civic sense of the motorist, although it is difficult to see why oyster conservation, for example, should be carried on as it is in part at least in Maryland, from levies imposed on the motor user!

The motorist's side of the story goes back to the first days of modern highway development.

At that time, the levies for road im-

provement were made either from general or local tax sources. Highways were clearly justified in the Constitution as a matter of general welfare and as long as a road is a medium for general travel, there is no legal debate over the propriety of improving it from general taxes.

If public funds obtained in this manner had been large enough to build the roads rapidly, it is doubtful if any other method would have been suggested.

But facilities usually lag behind demand in the pioneering stages of any new development and the road-bed has been no exception.

From 1913 on, automobiles were purchased in ever-increasing numbers and as the fleets grew, the pressure for highway construction became more and more insistent.

Finally, ignoring their own equities, the motorists themselves went to the several state governments, saying in effect:

"We want roads. You haven't sufficient funds to provide them. We'll help provide the funds by voting taxes on our vehicles if you will use our money

only for roadbuilding and maintenance."

Out of that beginning which can be attested by the recorded position of motor car users, manufacturers and dealers, the motor registration plate devised as a police designation in the first instance, became a road tax.

#### Gas Tax Used to Supplement Plate Fee

**L**ATER, AS THE demand grew and it became evident that some larger amount per car would be necessary, some one suggested the gasoline tax because it measured the use of the road closely and because too, it was payable in small amounts, whereas the license fee had to be paid at one time.

On this basis, then—the payment of a special tax in return for a special benefit in which he does not exclusively share—the motorist has contributed to road improvement in an increasing amount from year to year until today he pays around one billion dollars annually in special and personal property taxes for his car alone.

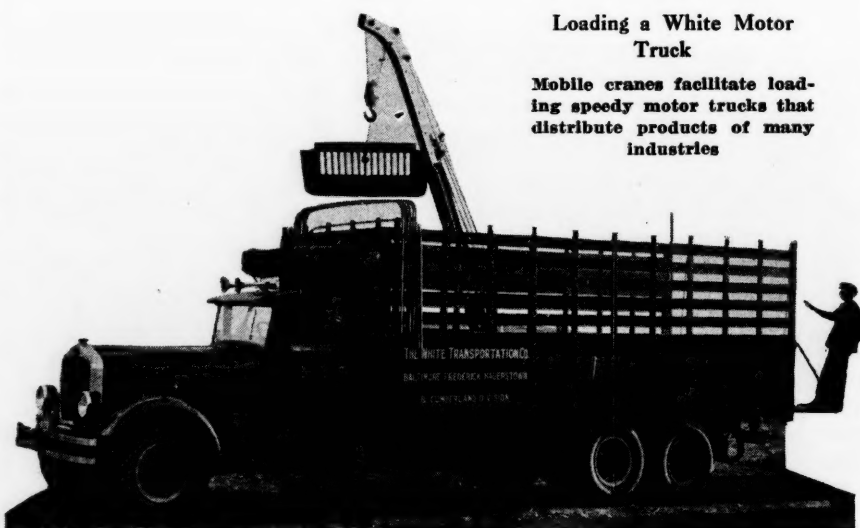
Out of that amount comes immediately two-thirds of the cost of rural road development, now more or less stabilized around \$1,500,000,000 annually.

Indirectly, the motorist pays a large share of the remaining amount in that his fees are used in large amounts as a credit basis for the flotation of highway bond issues for the further expedition of the work.

#### Endangers Whole Program

**F**ROM THE point of view of public interest in highway transportation, the diversion of any of these funds may readily be accompanied by serious results in several directions.

Probably the most important consideration at the moment is that which has to do with Federal Aid.



Loading a White Motor Truck

Mobile cranes facilitate loading speedy motor trucks that distribute products of many industries





**A 2-ton Selden Truck Chassis**  
The high lift dump body is used for retail coal delivery, a long chute facilitating discharge

At the request of administration authorities, state highway departments have pushed through their road work as rapidly as possible in the past year. One consequence has been that they have exhausted funds which would be available for continuing work in normal times.

Another is that as already noted, thirteen states are so close to the line that any diversion of funds now might readily result in a failure on their part to take up Federal Aid funds.

Finally, aside from the direct let-down in road work which would inevitably ensue there would be a lag in plans for road building which would make itself felt in six months or a year from now, at a time when just that stimulant might make all the difference in general conditions throughout the United States.

#### ***Funds Not Always Held for Main Roads***

**A** MORE DETAILED consideration, but one of immediate moment to the motorist is found in the diversion of funds, not from highway work but to less important phases of road development.

Before discussing this point, it should be noted that—by and large, the principles of highway finance which are now well established in our fiscal systems may be summarized in this way:

So long as the rate per individual does not become burdensome; the motorist has agreed to join with the general public in the payment of the construction and maintenance of those roads which are generally used by him, and which are necessary to the public as a whole.

Local property has stood the brunt of the improvement of roads which are not

generally used by motorists, but which, instead, may be classed as local roads which serve the land and connect it to main roads.

Street development has been classified along with local roads since city property would be valueless without the street which serves it.

Certain high-type roads within metropolitan areas have been financed from general or motor vehicle funds plus taxes on contiguous property because the increment in land values following their improvement has created a large special interest in the development.

#### ***Sub-Divisions Seeking Share***

**N**OW—THE SEVERAL agencies which have been caring for their road development through local or property taxation are coming to the foreground with a demand for a share in the motor vehicle revenues.

Ignoring the patent economic fact that rural roads are essential to city progress, municipal authorities are seeking relief

from other taxes in the gas levy while rural communities are interested in freeing themselves from land levies.

Sometimes, these claims have justification in that counties frequently have advanced local funds for main road development which they would not have had to bear if the state assumed its responsibility and issued bonds.

Sometimes, cities are faced with a necessity for a through road development growing out of traffic which is usually routed through the main part of the community but which may not desire to stop.

#### ***Diversion Not Justified Unless Motorist Agrees***

**W**HERE THESE claims affect the interest of the motorist himself, then no doubt, he will be ready to join in their consideration, but the point which should be made clear is this:

The motorist has accepted these tax levies on himself in return for a special benefit which he is entitled to receive.

It follows then, that none of these diversions should be permitted if they fail to meet the test of application to a road in which he is directly interested or if they tend to retard the development of those roads in which he as a class is most interested.

#### ***First Interest in Main Roads***

**A** GAIN, I RETURN to the illustration of the plight of thirteen states because taken in the large, it is in the immediate improvement and maintenance of the main state roads, that the first interest of the motorists as a whole is lodged.

Further, concentration of his funds upon these roads not only does not disturb the equity of other contributors to roads but actually protects it.

As a plain matter of fact, every dol-

#### ***Widened Section of Baltimore-Washington Boulevard***

This main route is now 40 feet wide, two 10-foot sections of concrete having been placed on each side of the macadam roadway





lar so expended releases local dollars for the development of local roads. In the last analysis, more will be accomplished by allocating these taxes to their proper field than through the fore-shortening of one fund by diverting its use to some field other than that for which it was intended.

Where the failure of the state to assume its responsibilities has resulted in large county expenditures for main roads, then return should be made.

### *State Should Control Expenditures*

**IN THIS CONNECTION**, the expenditure will be of greater value to the taxpayer if the funds are allotted by the state highway department for cooperation under an organized plan than if the money is simply pro-rated without safeguard.

Too many counties are still without organized highway programs and personnel. The relation between state, county and local development is too intimate to permit one to go ahead without the other. Construction and maintenance costs can be cut where the smaller unit has the advantage of the larger's experience, engineering knowledge and organization.

### *Sound Highway Finance Essential to Growth*

**SURVEYED AS A WHOLE**, the unparalleled advance which our engineers have been able to make in highway development during the past decade has been due in large measure to the prudent and carefully worked out plans of highway finance.

Highway transportation has been made largely a self-supporting institution despite the obvious fact that there is not a single group in our country which does not benefit from highway development and which could not be called upon to make much larger payments than it does in its own self-interest.

General taxation today meets little of the cost of our roads. Even the cost of local land roads has been lessened by the research and engineering leadership of the Bureau of Public Roads and the state highway departments.

### *Motorists Doing Their Part*

**THESE RESULTS** could not have been secured if motorists—and by motorists I mean all classes, whether users of trucks, buses or passenger cars,—if motorists as voters had not taken an

intelligently selfish point of view. Without their active cooperation, probably the finances would not today be available for road work on the great scale on which it is being carried out. Motorists would not have had their roads and when they did get them the operating costs would have been greater and industry and agriculture would not have been

able to attain their present proportions. In the public interest and their own alike, the motorists and all who use the roads are justified in hewing to the basic principle which has been maintained from the beginning:

"All special automobile taxes should go to the development of the roads which are used generally by motorists."

## Urge Toll Bridge Legislation

Adoption by Congress of a new bridge law "so framed as to prevent the nefarious practice known as bridge franchise peddling," is urged by the American Engineering Council acting upon recommendations in a report of its Committee on Bridge Legislation, of which Herbert S. Crocker, Denver, Colo., is chairman.

"The present system of granting bridge franchises is the outgrowth of a haphazard evolution of methods applicable before the advent of motor transportation and vastly improved highways," the report declared. "It involves a great waste of time and does not, in many ways, protect either the interest of the public or the investments of those who build the bridges.

"There are in existence abuses of the present system, notably the obtaining from Congress of franchises for the sole purpose of their exploitation and sale at inflated figures. The processes and restrictions upon recapture should be thoroughly aired and reduced to a working basic fair to all concerned.

"There should be a greater and more definite measure of co-operation than now exists between the various agencies of administration. The existing bridge laws can be very much simplified and made more easily workable."

"Private capital should be encouraged to construct toll bridges," says the Council in a statement of principles to be considered in framing new legislation. A toll bridge, it holds, should be permitted only where the local authorities are on record as not willing to construct a free bridge. A clause permitting recapture not sooner than 20 years after the completion of the bridge, is favored. Unreasonable limitations upon financing, design, construction and maintenance are opposed.

The Council points out that it is becoming increasingly difficult for states to find ways of financing great bridge structures; hence, privately owned toll bridges are meeting a great need. It is suggested, however, that such structures may be considered public utilities, and as such ought to be under public regulation. It is pointed out that there are approximately 300 toll bridges now in use in this country, while 58 are under construction, and 350 more proposed. The present toll bridge situation should be corrected, the Council holds, notably

in respect to the correction of the exploitation of permits to build toll bridges. The cost of constructing and financing many toll bridges has been watered or inflated with the result that this has made the cost excessive to the public when it is desired to purchase such structure.

### *\$80,000,000 Apportioned for Emergency Road Work*

Secretary Hyde has apportioned to the States \$80,000,000 for immediate use in Federal-aid road construction, as provided in the act approved December 20, providing for emergency construction to increase employment. Apportionment was also made of \$3,000,000 for the building of roads on public lands to be administered by agreement, by the States or by the Bureau of Public Roads.

According to the provisions of the emergency legislation, these funds are to be used by the States in place of State funds to match regular Federal-aid funds previously authorized and apportioned. On November 30 the Federal-aid funds available to the States for new projects amounted to \$155,383,877. Since each State had to its credit an amount at least equal to the sum now made available, it will be possible to spend \$160,000,000 in road work without providing any money from State sources.

The Federal Government is now prepared to advance the full cost of projects submitted under the emergency legislation. The sums advanced to the States from the \$80,000,000 appropriation are to be reimbursed to the Federal Government over a period of five years, commencing with the fiscal year 1933, by making deductions from the regular apportionments of future Federal-aid authorizations.

The amounts advanced will be limited to the sums actually paid for work performed under new contracts for the construction of Federal-aid roads before September 1, 1931. No part of the emergency employment relief funds will be available for projects in which convict labor is used.

# Transportation Service

BY ALFRED REEVES

General Manager,  
National Automobile Chamber of Commerce,  
New York City

A CONCERTED drive for rate increases which would add hundreds of millions of dollars annually to the traveling and shipping costs of the public has been undertaken during the past few months by railroad executives, and railroad labor unions.

This time, however, they are not seeking the increases for themselves, nor do they call them "rates."

Instead a more indirect method is chosen.

The public is asked to increase taxes against itself for its use of the highways it has built in order to "equalize competition."

Brick Road  
in Georgia



In other words, "Trucks and buses are taking our business. Increase their taxes so that they will be compelled to raise their charges to you, to the same rates which we charge."

Whether the increase is called a rate or a tax, the effect is the same. The

shipper and the traveler are called upon to buy the railroad apple.

## *Facts Are Ignored*

LIKE MOST STATEMENTS designed to influence public opinion rather than to inform it, this barrage ignores facts of pertinent interest to the taxpayer, shipper, consumer and user of highway transportation.

The rail propagandist repeatedly says that motor transport is not paying for use of the highway, although facts to the contrary are instantly available.

No weight is given to the fact known to every traveler and shipper that the bus and trucks perform transportation service which no rail line as such can ever give.

Nor is the large issue discussed of whether railroad management meets its full responsibility to the public and to its stockholders when it confines its operation to rigid rail tracks instead of selling transportation.

The whole history of transportation progress is forgotten in the effort to pull back to railroads a tonnage and a passenger movement which frequently never was there.

In any consideration of the merits of highway transport the element of selfish interest is always presented.

The shipper and the public have adopted it, and like it, because it serves



An Alabama  
Concrete Road



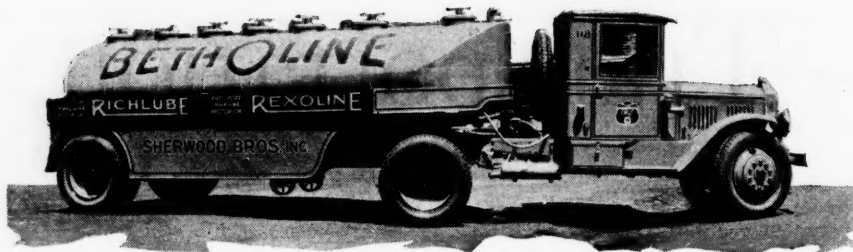
them better than any other form of transportation rendered.

The rail lines look upon highway transport as a competitor that takes away traffic which they think belongs to them.

Because of this difference of opinion it seems necessary, if we are to arrive at sound conclusions, to disregard the selfish interest of both the highway and rail lines, and consider only the interest of the public—in setting up principles which should govern the orderly development of our transportation facilities.

### *The Public Viewpoint*

**FROM THIS POINT** of view, a recent expression from Thomas F. Woodlock, formerly a member of the Interstate



A Mack Tractor and a Freuhauf Drop Frame Semi-Trailer

tive form of transportation unless it desires to do so.

In order to evaluate the efficiency of the motor vehicle, it is necessary to understand the service which it can perform.

Highway transport—whether bus or truck—developed within the last ten

rails are not equipped to render and cannot furnish.

That these statements are reflected in actual operation can be adequately demonstrated in the facts of truck movement as disclosed by government studies. Thus:

Of the more than 3,500,000 motor trucks now in service, more than 80 per cent are privately owned, some 11 per cent are contract carriers, and 7 per cent are common carriers. Of the last named, less than two per cent are engaged in interstate haulage.

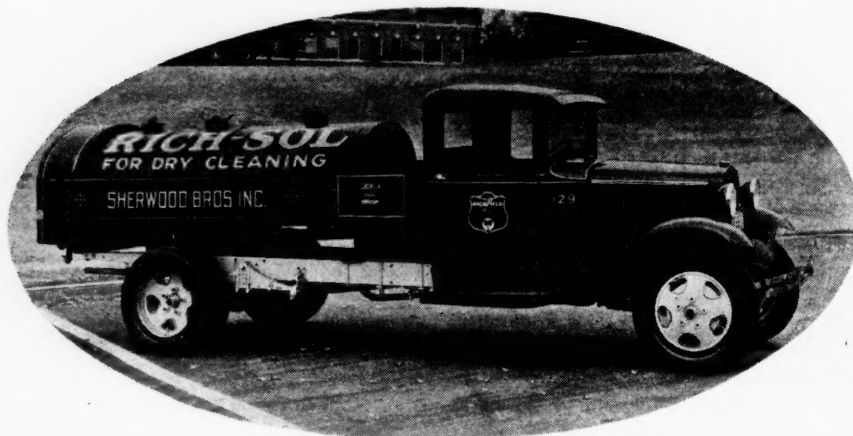
Further analyses show that from 60 to 80 per cent of the movement is limited to a 30 mile zone, and another 11 to 20 per cent to sixty miles. Only a fraction of the haulage travels greater distances.

Other data compiled from industrial sources shows that 500,000 trucks are owned by farmers. Most of the remainder are owned and operated by individual shippers such as grocers, bankers, icemen, milkmen, retail and wholesale stores, gasoline companies, construction firms, in fact every agency of production and distribution.

### *Successors to Wagon*

**IN THEIR DAILY USES**, these vehicles perform countless services which only the horse-drawn vehicle could render and then only on a very limited scale in the days prior to motor transport.

They enable the producer of perish-



A Ford Truck With a Three-Compartment Tank

Commerce Commission is of value as reflecting informed public opinion.

Writing in the Wall Street Journal on this subject, Mr. Woodlock laid down some "first principles" for consideration.

The first is quoted here as a text for discussion in this article. Others follow. All are accepted.

Mr. Woodlock begins:

"The public is entitled to any and all forms of transportation which can justify themselves on grounds of efficiency and economy. It is not required to support any form which cannot justify itself in this way. To the extent that any existing form of transportation may prove to be either wholly or in part, uneconomical, inefficient or unnecessary, it is the misfortune of those who have embarked their capital therein and not the fault of either the public or those who provide more economical and efficient means of rendering the service."

The first test of motor transport under Mr. Woodlock's formula is the question of whether it can be justified on grounds of efficiency and economy. If it can, then the public is entitled to its use and is not obligated to support any alterna-

years is a new form of transportation.

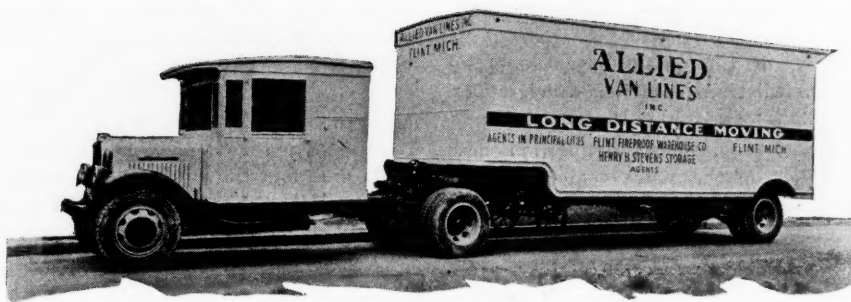
Highway transport is in some respects competitive with, but not comparable to, rail transportation.

It renders a flexible and personal, or individual transportation service—factory to merchant, merchant store-door to the consumer—anywhere to everywhere. A type of service which the



A Double-Deck Intercity Bus of the Greyhound Lines





A General Motors Truck-Tractor Pulling a Trailer

able produce to broaden his markets and they give the consumer a better quality of food.

They generate new business for the railroads and take away a less than carload movement which countless pages of railroad testimony in the past have termed an unprofitable business for those carriers.

They quicken the whole system of distribution, cutting inventory costs as they do it. In thousands of ways they add to the comfort and convenience of modern life.

From the testimony of the shippers best found in the increasing use of the vehicle, and in the exhaustive government studies back of the figures quoted, the truck meets Mr. Woodlock's test of efficiency.

### Is It Economical to the Public?

**F**EW WILL QUESTION EITHER, whether it meets the test of economy as far as the shipping public is concerned, but the railroads have raised the question of whether its use is economical in its relation to highway costs.

On this point Mr. Woodlock says:

"To the extent that new forms of transportation occupy and use public facilities, such as highways and waterways, they should be compelled to bear their fair share of upkeep of such facilities, and no more than their fair share. Neither regulation nor taxation may fairly be used either to subsidize or to hamper any of the competing

forms, by attempting to equalize natural inequalities. Each of these forms is entitled to such natural advantages as it possesses and each must put up with its disadvantages. Only in this way can the public obtain the full benefits of improvement in the art of transportation."

Here, too, there are facts which the



A Republic Truck and Trailer Used in Oil Field Operations

public has developed for itself, through its government agencies.

To begin with, conditions which were true two years ago no longer obtain in the fast-moving cycle of highway transportation.

Highway and vehicle design are being more closely tied together almost from day to day.

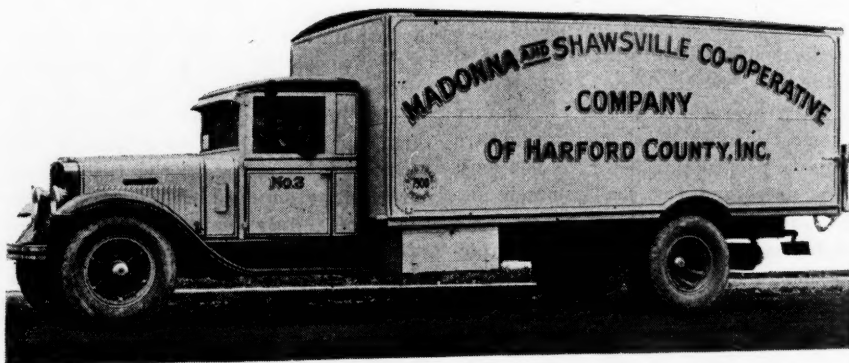
general taxes which the general public pays.

Although the highway development was undertaken to provide roads for private passenger cars and although the facilities would be there if they were not otherwise used, railroad executives still insist that the trucks and buses should pay their share and that they are not paying any.

This year government reports show that motor trucks and buses will pay more than \$250,000,000 or 25 per cent, although they constitute but 12 per cent of the vehicles.

### Heavy Vehicles Pay Disproportionate Share

**F**URTHER, only an inconsiderable percentage of these trucks and buses are more than 2½ tons in weight, or heavier than high-powered private automobiles. That number—less than 10 per cent—pay at least 25 per cent of the total truck and bus special taxes, the amounts



An International Truck Equipped to Transport Dairy Products

often ranging as high as \$1000 per unit and sometimes reaching \$2000 in the limited common carrier class.

By what stretch of the imagination can it be said that they are not paying for the use of the roads—or rather that the people who use them are not paying?

If these statements are correct, and everyone of them comes from a public source on the basis of studies of fact, then again the commercial motor vehicle meets Mr. Woodlock's tests of efficiency and economy and self-support, and the public is entitled to their uses.

#### *Regulation In Public Interest*

WITH RESPECT TO REGULATION, railroad leaders are saying that it is unfair to regulate their systems and not to subject competitors to similar restrictions. Here Mr. Woodlock says:

"Regulation of rates, charges and practices of public service utilities is required only when those utilities are supplied by monopolistic or semi-monopolistic organizations with exclusive or semi-exclusive rights of occupancy of the field. To the extent that a field occupied by such an organization is opened to competition at the hands of a new agency, the true policy is to relax the regulation of the original occupier so as to enable it to meet the competition of the newcomer—and not to attempt by regulation to suppress or hamper that new competition, so long as it is reasonably economical and efficient. The public is entitled to the benefits flowing from such competition, but it must be fair competition."

Mr. Woodlock then makes a distinction between private and common carrier transportation, holding that under all conditions the former should be regulated only insofar as the public order and safety of life and limb are concerned, and goes on with this pertinent observation:

"'Regulation' as such is not a good thing in itself, and is justifiable only under the principle of choosing the 'lesser evil.' It should extend no further than is absolutely necessary for protection of the public interest. Regulatory bodies are fertile breeding grounds for bureaucracy, than which there are few more evil things in a 'democracy' such as this country. Where powers to regulate are granted they should be most clearly defined and rigorously limited."

#### *Sole Test Is Service to Public*

TO ALL THAT he has said here, there can be no valid objection except from interested parties. Railroad regulation was enacted when railroads were monopolists of transportation. Times have changed. There should be review of

these forms of control, not in the interest of the railroads per se, but in the interest of the public in efficient and economical transportation, which as Mr. Woodlock observed is the true test.

The question of what regulation there should be of the motor vehicle must be determined equally, not upon the desires of any one group to obtain control, but

rather upon the paramount test of whether the public is receiving in full measure the service which it desires.

Only as any form of transportation meets these public issues can it survive. To the extent that it does, as Mr. Woodlock points out, the public cannot be expected to deprive itself in favor of any one group.

## Auto Export Trade to Flourish

By ROBERT C. GRAHAM.

Chairman Export Committee,  
National Automobile Chamber of Commerce

WITHIN the automotive industry there is a conviction that exports in 1931 will be again on a satisfactory basis.

The automobile industry has always led the revival of business and its returns to normalcy. Its product has become essential in the economic development of all nations, a product of which no nation as yet has a sufficient quantity, and, finally a product that everyone in the world hopes to own some day as soon as he can get the necessary money. Therefore, if the upward turn comes in 1931, as those qualified to know seem to think it will, automotive exports will be the first to respond.

Not only do individuals find the automobile indispensable but nations, as well, have become dependent for revenue upon the hundreds of millions of dollars brought to them annually through taxation and customs.

Careful analysis shows that nearly \$750,000,000 was the tax bill paid directly last year by the automobile and its owners in Asia, Africa, Europe, Oceania and all parts of the western hemisphere south of the Rio Grande.

This estimate includes registration and license fees, import duties, gasoline taxes and other direct taxes. It does not take into account the taxation of automobiles in the United States and Canada, but it does prove conclusively that the governments of the world cannot ignore or restrict such a source of revenue.

In fact, everything points to the fact that most countries of the world are coming to regard the motor vehicle as a utility necessary for the economic development of every modern nation.

Motor vehicles of American manufacture sold in foreign markets during 1930 totaled 561,000 cars and trucks. This amounted to approximately one-sixth of all the cars made in this country during that period. Foreign consumption

of motor vehicles, parts and tires in 1930 had an estimated wholesale valuation of \$344,700,000.

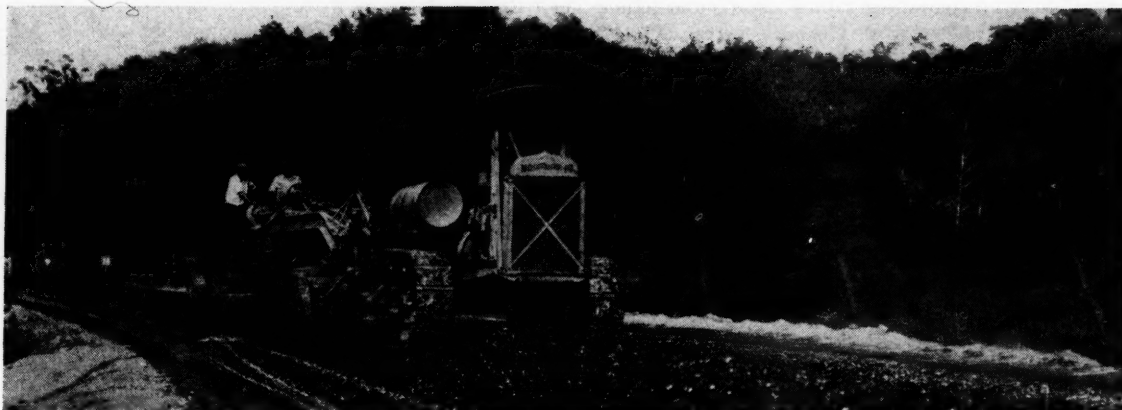
With recognition of this utility phase of the automobile, it may be assumed that governments will adopt a sounder attitude, embodied in reasonable import duties, moderate registration fees and a tax collected in small amounts over the life of the car.

About 9,000,000 motor vehicles are serving the peoples of nations other than the United States. In this country with plenty of good roads and service stations always easily available it is estimated that seven years is the life of the average car. In many foreign countries where cars are subject to much harder wear than here, it is even probable that the life of the car is shorter.

If only one-tenth of these nine million automobiles are to be replaced in 1931 the demand from this source alone abroad will exceed the number of automobiles of American design ever sold abroad in a single year by the entire American industry. When the sales deferred from 1930 are taken into consideration, one realizes what unfilled demand is being carried over into the next season.

Automobile values have also been increased to meet the present reduced general purchasing power of the farmer, the working man and the great mass of the population here and abroad. These economies passed on to the consumer abroad become even greater because of pyramiding savings that result also in tariffs and taxes in other countries. For instance, a lowering in the cost of the car means even more in a country where the import duty is assessed on an ad valorem value than it does in the United States. All in all, there are quite a few favorable factors which point to a reasonably sized and profitable export business for the automobile industry during the coming year.





A Caterpillar "60" Tractor With a Leaning Wheel Grader Mixing Crushed Stone and Bituminous Material in Re-tread work on a Job of the Southern Oil and Tar Co., Louisville, Ky., at Morehead, Ky.

# Low Cost Highways

By

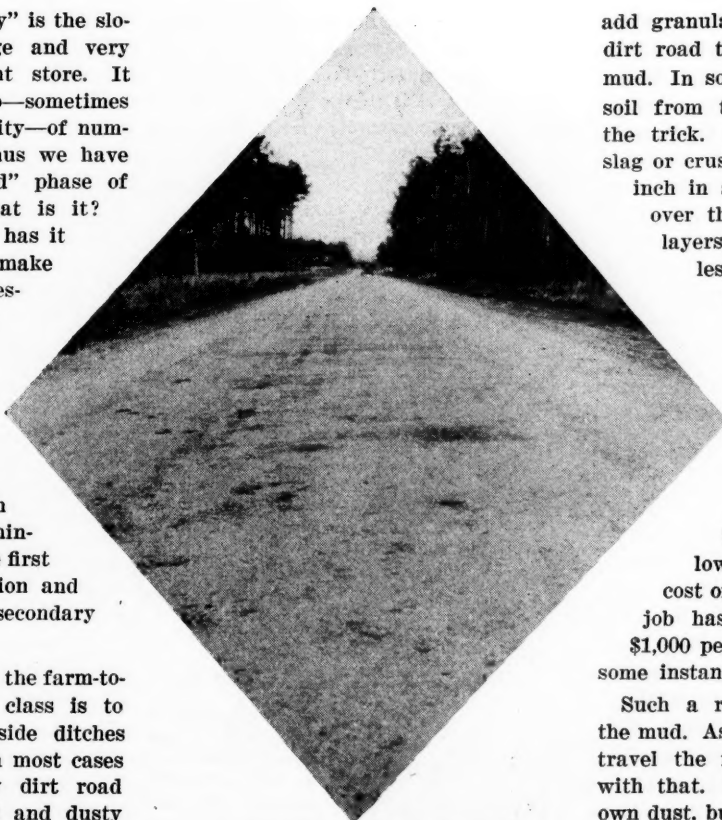
GEO. E. MARTIN

Consulting Engineer,  
General Tarvia Department,  
The Barrett Company, New York City

"IT'S smart to be thrifty" is the slogan of a very large and very successful department store. It has also become the motto—sometimes by choice, oftener by necessity—of numerous highway officials. Thus we have the current "low cost road" phase of highway development. What is it? What does it mean? What has it accomplished? How can we make use of it? These are fair questions which we will endeavor now to answer.

The field of the low cost road may be separated into three general divisions. First, the original improvement of low traffic feeders to main highways. Second, the elimination of dust on roads of the first class. Third, the conservation and improvement of existing secondary pavements.

The first step in improving the farm-to-market roads of the first class is to grade them and construct side ditches to carry the water away. In most cases this produces the ordinary dirt road which is muddy when wet and dusty when dry. Only in rare instances will the natural soil make even a fairly good road in wet weather. It is necessary to



A Tarvia Treated Sand-Clay and Top-Soil Highway Project in North Carolina

add granular material over the graded dirt road to get the traffic out of the mud. In some parts of the country top soil from the adjoining fields will do the trick. Generally, however, gravel, slag or crushed stone, ranging up to one inch in size is used. This is spread over the surface in relatively thin layers, about three inches at first, less later, and pounded into the top by traffic. Additional aggregate is added as fast as the road will take it. This process is continued for two or three years until traffic is successfully carried throughout the year. If local material can be obtained the cost will be low and it will go up with the cost of the aggregate. The original job has been done for less than \$1,000 per mile and has cost more in some instances than \$5,000 per mile.

Such a road gets the users out of the mud. As long as only a few of them travel the road they will be satisfied with that. We never worry about our own dust, but as soon as travel is heavy enough so that we must eat the other fellow's dust, we begin to yell. Also this dust takes material from the road



and deposits it on the farmers' vegetables and fruit and the housewives' clean clothes to the detriment of all. Maintenance costs begin to rise and our low cost road has entered the second phase.

Fortunately it is possible to bind the surface of this road tightly together and make it dustless for a comparatively small outlay. While the details vary in different localities, the general principles are the same, namely the application of a prime coat of about one-third gallon of cold refined tar per square yard and a seal coat of about the same amount of heavier tar covered with coarse sand, pea gravel, granulated slag or stone chips. The prime coat of tar penetrates into the surface and binds the particles together forming a toughened crust while the seal coat closes up and waterproofs the surface. The cover material prevents the tar from picking up under traffic and produces a stronger, non-skid surface.

Sometimes the loose gravel on the surface is mixed with the tar by the use of a blade grader or road drag. This increases the cost slightly but produces a thicker and stronger tar bound top.

Our road can now be maintained with an easy riding, dustless surface by successive economical tar seal coats every two to five years depending upon traffic and climatic conditions. Unless the weight of traffic increases greatly, these simple treatments are all that will be needed. If the road shows signs of distress because of increasing traffic it can be used as a foundation for a retread top such as will be described later.

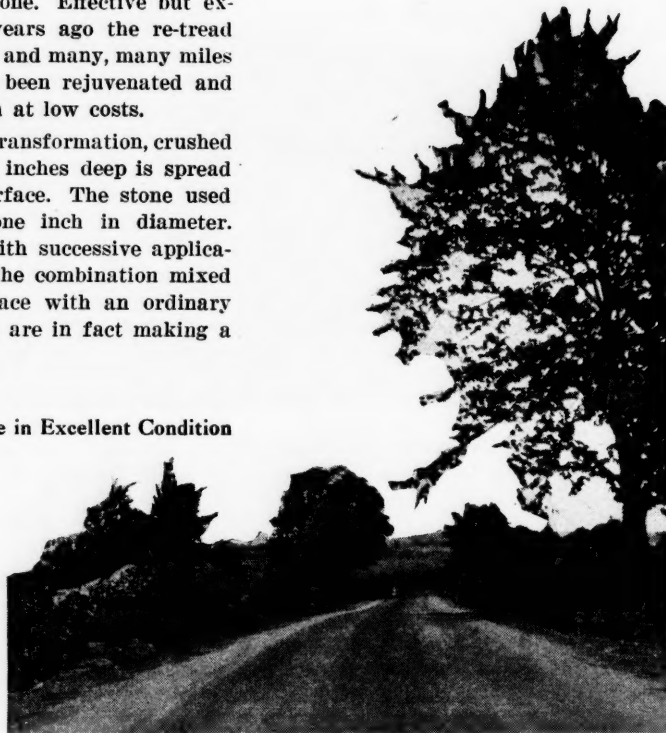
We will now consider the third phase of low cost road development, the conservation of existing roads. Almost every community has a number of roads or streets which are strong enough to carry the loads which come on them, but how we hate to drive the old bus over them! She bounces and rattles and our driving is severely criticized by the occupants of the back seat. Until recently the remedy was to tear out the old road

and build a new one. Effective but expensive. A few years ago the re-tread top was developed and many, many miles of old road have been rejuvenated and made young again at low costs.

In making this transformation, crushed stone about three inches deep is spread over the road surface. The stone used averages about one inch in diameter. This is covered with successive applications of tar and the combination mixed on the road surface with an ordinary blade grader. We are in fact making a

#### A Re-Tread Surface in Excellent Condition

Crushed stone about three-inches deep is spread over the surface and mixed in place with successive applications of tar. A power roller is used to consolidate the "tar-concrete."



tar concrete using the old road for the mixer box and the grader for the mixer blades. After all of the stones are coated with tar, the resulting mixture is graded out smooth and kept so with the grader until the tar becomes sticky. Then a power roller is used to consolidate the tar concrete. The roller is operated until the material is thoroughly compressed. A tar seal coat with a pea gravel, granulated slag, or stone chips imbedded in it with the roller completes the job. This sounds unscientific and perhaps it is, but it works. Several thousand miles have been built in various parts of the United States and Canada at an average cost of from forty to seventy cents per square yard depending on the cost of the aggregate.

In addition to smoothing the old surface, this treatment adds appreciable strength to the road. Successive tops can be added when needed because of changing traffic conditions.

Low cost as applied to roads will always be a relative term. What is low cost in some localities and under some conditions will become medium or perhaps high cost as the location and the conditions change. The best way to have

low cost roads is to utilize local aggregates and take advantage of the latest methods developed for the economical use of modern bituminous materials. Machine operations are necessary to reduce costs and to produce the easy riding surfaces demanded by the present day motor vehicles operator. Where old roads can be modernized for little expense it is folly to destroy them and build costly new ones.

The experience of hundreds of road districts scattered over wide areas, under various climatic conditions, proves that any community can now afford to have easy riding, dustless, non-skid, safe road surfaces—in fact it cannot afford not to have them.

#### Allot Emergency Federal-Aid

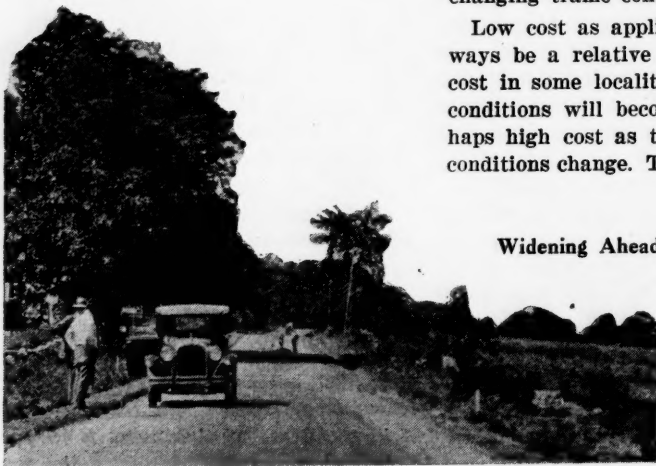
The Bureau of Public Roads of the Department of Agriculture has allotted emergency Federal-aid totaling \$80,000,000, as provided by a recent act of Congress.

The apportionments for the 16 Southern states follow:

State	Sum Apportioned
Alabama .....	\$1,698,645
Arkansas .....	1,388,157
Florida .....	1,086,438
Georgia .....	2,077,996
Kentucky .....	1,504,715
Louisiana .....	1,147,927
Maryland .....	678,752
Mississippi .....	1,434,736
Missouri .....	2,526,823
North Carolina .....	1,926,775
Oklahoma .....	1,926,351
South Carolina .....	1,114,636
Tennessee .....	1,741,882
Texas .....	5,088,080
Virginia .....	1,505,502
West Virginia .....	875,384

#### Widening Ahead of Re-Tread Top

Many miles of old roads are annually rejuvenated by the re-treading process at comparatively low cost and made serviceable the year-round.



# Speed With Safety

By  
J. L. BAUER,  
State Highway Engineer,  
Trenton, N. J.

THE State of New Jersey in the construction of State Highways is now working on a program planned and passed by the Legislature in 1927. The Legislative Act includes 1860 miles of roads, of which 1250 miles have been taken over by the State Highway Commission and improved, leaving 610 miles not yet taken over. In comparison with the mileage of highway systems in other states this total mileage is small. In New Jersey, however, a system is followed which is somewhat different from most other states. The county here is a large factor in road building and most of the counties have highways just as well located and as well built as those of the state. The county highways total about 4,000 miles, a large part of the work

struction of the entire system as now planned for completion is \$304,759,575. From January 1, 1927 to July 1, 1930 there had been expended \$95,224,066, thus leaving an estimated cost for completion of the entire system as now planned after

*IN building roads to eliminate traffic congestion and permit speed with safety, New Jersey is setting an example that should be of particular interest to the country in general, and the South in particular. A \$65,000,000 bond issue will be devoted exclusively to the building of bridges, tunnels, sidewalks, underpasses, overpasses and elimination of grade crossings. One 15,000-foot section of a state highway is to cost \$21,000,000. Approaches to a Hudson River bridge will cost \$10,000,000. An express route from the Holland Tunnel at Jersey City, to and through Newark, is planned at a cost of \$20,000,000. An elevated state highway through Newark is being built at a cost of \$15,000,000. Highway grade separation projects and traffic circles are being built to prevent accidents at intersections. New highways are routed to bypass built-up communities.*

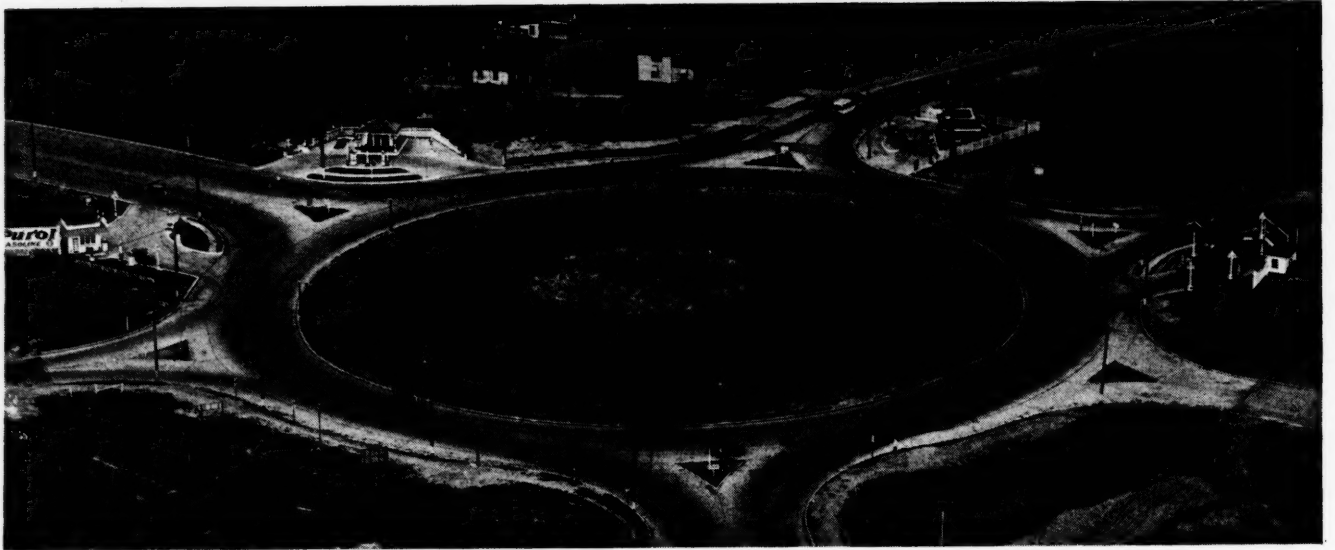
July 1, 1930, the sum of \$209,535,509. At the recent election the voters of the state authorized a bond issue of \$65,000,000 for new state highway construction, the money being allocated only to bridges, tunnels, viaducts, underpasses, overpasses, rights of way and eliminating railroad grade crossings. No actual roadway construction is included in the bond issue limitations. There will be available in 1931 about \$19,000,000 for new state highway construction from the 3-cent gas tax and motor vehicle license fees income. There will also be available from the bond issue the sum of \$18,000,000, making a total of \$37,000,000 available next



having been done through financial aid furnished by the state. In many other states the county does not cut much of a figure in road building matters and it is, therefore, considered that New Jersey's state highway mileage should be placed at about 5800 miles, when compared with other states whose counties do not do road building to any great extent. The operation of the system is such as to leave the most costly highways for state construction. The total cost of con-

\$1,500,000 Raritan  
River Bridge





Traffic Circles Have Been Built at Many Points Where More Than Two Highways Intersect. This Circle Is at Camden, on the New Jersey State Highway Entrance Road to the Delaware River Bridge on the Route to Philadelphia.

year for new construction. Under the present set up of funds it is anticipated that the entire system will be constructed and completed in about 6 years time.

The State Highway Commission is constructing many important and costly routes and sections of routes. New State Highway Routes No. 25 and No. 26 have been completed from Jersey City to Trenton with the exception of a section about three miles long between Jersey City and Newark which is now under construction. This uncompleted section passes over two navigable streams, the Hackensack River and the Passaic River, with fixed span bridges at a clearance of 135 feet above high water. The entire cost of the 15,000-foot section will be about \$21,000,000, of which about one-half is now under con-

tract. The section of this route in Jersey City is partly on viaduct and partly in a depressed cutting and the section through Newark is entirely of viaduct construction, so that when the present uncompleted portion is completed the result will be a highway from the Holland Tunnel at Jersey City to Elizabeth, about 13 miles, without grade crossings with other highways or with railroads. There will be a number of ramps for entering and exit traffic.

#### *\$10,000,000 for Hudson River*

##### *Bridge Approaches*

**A**NOTHER VERY IMPORTANT project now under way is the building of the approaches to the new Fort Lee

Bridge over the Hudson River to New York City. The bridge is being constructed by the New York Port Authority, at a cost of about \$60,000,000. The highways leading to the structure on the New Jersey side will provide entrance and exit in all directions and to all points of the state, there being five main highway routes concentrating at the bridge mouth. The cost of this work, within a few miles of the bridge entrance, will run to possibly \$10,000,000. The approaches are so planned as to avoid all intersections with any kind of cross traffic until the motorist is well out of the approach zone. At one place there are three different highway levels crossing at the same point so as to avoid grade crossings of traffic on these heavily travelled routes.

A Clover-Leaf Type Highway Grade Separation Project Constructed Near Rahway to Eliminate Grade Intersection of Two Important State Highways. All Left Hand Turns Against Approaching Traffic Are Barred by This Unique Arrangement.





### 50,000 Cars Daily Over One Highway Route

AT CAMDEN the State Highway Commission has constructed a highway known as the Crescent Boulevard which takes the traffic from the Philadelphia bridge and runs around the edge of Camden, distributing the traffic to all points, North, South and East. There is a tremendous traffic across the state from Camden to Atlantic City which is now borne, for the most part, by the present highway known as the "White Horse Pike." The traffic on this highway frequently reaches a maximum of 50,000 cars per day during the summer. The Commission is planning and has partly completed a new highway somewhat to the southwest of the White Horse Pike, known as the "Black Horse Pike." This is constructed for the entire length of about 60 miles across the state with the exception of some 17 miles at the easterly end, which section is to be completed at an early date.

### Elevated Highway Through Newark Under Way

ROUTE 21 which will run through the city of Newark is another important link in the highway system. It will be elevated on a viaduct for about two miles and when built will supply the means of getting from the Hudson River bridge and from points in the northeastern part of the state down to the Atlantic sea-shore and to Trenton and Philadelphia very rapidly and safely, as the elevated viaduct through Newark will avoid all street crossings in this populous city. The cost of this route will be about \$15,000,000, the work now being under way in the procurement of rights of way.

Another route is Route 10 which will run from the Holland Tunnel at Jersey City to and through Newark and thence to the western part of the State. This will be largely on viaduct and will include a number of railroad grade separations. The estimated cost of this route is \$20,000,000.

### Building Highway Grade Separation Projects

THE COMMISSION has, in recent years, gone quite extensively into the separation of grade crossings, not only with railroads, but with other highways. Many traffic circles have been constructed throughout the State for the betterment of safety conditions. The so called "Clover Leaf" construction has been constructed and planned in a number of instances. This is only useful where there are but two highways crossing at the one point and it is so arranged that there is no

crossing whatever by any one lane of traffic with another lane of traffic, at grade.

### Traffic Circles for Safety

THE CONSTRUCTION of traffic circles has been entered into very largely in the state and is uniformly of great benefit from the standpoint of safety. A traffic circle will take care of more than two intersecting roads at one point and is especially useful where there are more than two highways intersecting. In this construction the motorist enters the circle by turning to the right and always leaves the circle by turning to the right. It has been found very efficacious in the prevention of accidents at intersections.

### By-Pass Routes the Rule

OUR NEW HIGHWAYS are, in most instances, designed to by-pass, wherever possible, built up communities. In former years communities frequently wanted the highways to run through their centers, but owing to the tremendous traffic, the unsafe local traffic conditions, and the cost of policing, this situation is not now desired and for the most part municipalities desire to have the highways pass around their edges, the county or the municipality itself constructing highways for entrance and exit.

### 10-Foot Lanes Constructed

OUR CONSTRUCTION is mostly of reinforced concrete and all highways are built in 10-foot wide lanes, the total width being 20 feet, 30 feet, 40 feet or more, as the traffic may require. A feature of our recent construction is Route 26 from New Brunswick to Trenton, which has a straightaway of some 20 miles. The right of way is 100 feet in width, the concrete pavement 30 feet in width and the graded space between gutters 60 feet in width.

A similar construction is the new highway known as Route 29 which runs from Springfield to Somerville, a distance of about 20 miles. The right of way here is 100 feet in width and the pavement 30 feet in width. The highway runs, for the most part, along the foot of the Watchung Mountains and is a fine scenic route.

### Highways at \$250,000 a Mile

THE MINIMUM COST of state highway construction in New Jersey is \$50,000 per mile, exclusive of rights of way and bridges. The addition of the cost of rights of way, bridges, traffic grade separations, viaducts, etc., however, is such as to make the average present day cost of state highway construction in the

state \$275,000 per mile, this including all types of highways.

The State Highway Commission has a Maintenance Department designed to cover all parts of the State and to remedy at once any emergency bad traffic condition which may occur. The cost of this work for 1929 was \$2,297,911. Snow removal equipment is maintained at various points in the state for the immediate removal of snow. During the past three years, however, there has been so little snow that the equipment has, for the most part, been lying idle.

## Sound Financing Plan Essential to Success of Road Program

Century-old conditions and laws govern the administration of highway funds in some parts of the United States, according to the findings of the American Road Builders' Association committee on highway finance, of which T. H. Cutler, chief engineer, Missouri State Highway Commission, is chairman. The report this year will include a summary of methods of financing and administering highway funds in the 48 states.

While highway funds have steadily increased for some years past, and evidently will continue to do so, in some places there has been little simplification of administering bodies or methods. Future highway development depends on sound financing and wise use of funds. All the financing methods in existence have the same objective—the economic construction, maintenance and operation of highways. Complicated methods of fund allocation by states to smaller political subdivisions are misleading to the public. Highway funds are used in some instances for purposes other than highways. Counties have authorized bond issues to build state highways. The report will throw light on all these subjects. The nation's outstanding highway engineers, financiers and professors of highway engineering have contributed to the study through committee membership.

Many political subdivisions are too small or too poor to employ adequate engineering services. There is need for greater consolidation of road building jurisdiction, Mr. Cutler declares. The development of a plan of highway financing and administration is needed that tends toward centralized planning, combines resources, permits the use of adequate engineering supervision and is dictated by existing conditions.

# Southern Road-Building

**I**N 1931 approximately \$600,000,000 will be expended in the 16 Southern states for improved road and street facilities. Road building programs outlined for this year in the South indicate more than \$300,000,000 will be expended on state highway systems alone. Similar work to be undertaken by counties, parishes and districts, and paving work in towns, cities and residential subdivisions will, it is estimated, involve an equal or even greater expenditure.

Louisiana with a program to involve the expenditure in 1931 of \$60,000,000, sets the pace for the South. The outstanding project in the state is a proposed \$21,000,000 highway and railway bridge over the Mississippi River at New Orleans. This year Louisiana proposes to build 3200 miles of concrete, asphalt and gravel roads, together with 15 major bridges costing from \$200,000 to \$1,500,000 each.

Four Southern states are expending big sums for the construction of state-owned toll bridges, which will be declared toll-free as soon as the bonds are paid off. By this method of financing such costly structures the states are able to concentrate motor vehicle license fees and gasoline tax revenue on road work. Kentucky is expending \$8,000,000 for 10 such structures. During 1930 Tennessee completed 16 toll bridges and now has under construction another, and proposes three more major bridges. Alabama built 15 toll bridges at a cost of over \$5,000,000. Arkansas completed five state-owned toll bridges and has four others under way.

Southern states are adding yearly to their state highway systems. For instance, Arkansas now has 8900 miles of state highways compared with 6637 miles in 1923. Virginia, in two years, will add 1800 miles, bringing the state highway system total mileage to 9000. Tennessee is maintaining rural roads on the secondary and district system, aggregating 12,255 miles, bringing the total mileage under the supervision of the state department to approximately 20,000 miles. The mileage of the West Virginia state system was increased to 4151 last year.

Several Southern states have increased the gasoline tax to six cents a gallon. Additional state bond issues were approved last year and plans for further bonding are now being considered. With additional road funds recently made available from increased Federal aid, with steadily mounting revenues from gasoline taxes and license fees, and funds provided by new bond issues, the South this year will go forward with its greatest road and bridge building program, representing an increase of about 10 per cent over the previous high figure recorded in 1930.

## \$60,000,000 Program for Louisiana in 1931

By HARRY B. HENDERLITE,

State Highway Engineer, Baton Rouge, La.

Our program for 1930 consisted of 503 miles concrete pavement, 1242 miles gravel surfacing and 7.76 miles combination steel and creosoted timber bridges. The cost of the total program for 1930 was \$26,000,000.

Our 1931 program will consist of 1200 miles of concrete pavement, 500 miles of asphalt pavement, 1500 miles of gravel surface, 10 major moveable spans and 5 major fixed spans combination steel and

concrete bridges, ranging in cost from \$200,000 to \$1,500,000 and a one-third participation in a bridge over the Mississippi River at New Orleans to cost approximately \$21,000,000. The program for 1931 is estimated to involve the expenditure of approximately \$60,000,000, about two-thirds of which will be completed during 1931.

The length of the average paving project is over ten miles. Concrete paving is 8-6-8 section, unreinforced. Ce-

ment is purchased by the state. Grading on paving projects is medium to heavy. All large structures let under separate contracts. All construction work performed under standard highway contracts awarded to lowest responsible bidder with no political interference with award or operation of contracts. All designs and plans for highways and bridges prepared and all construction supervised by engineers of Louisiana Highway Commission.

## \$10,000,000 for North Carolina State Highways This Year

By W. E. HAWKINS,

Construction Engineer, Raleigh

During 1930 the following work was let to contract:

Graded roads .....	59.03 miles
Topsoil, sand clay.....	87.56 "
Gravel .....	71.68 "
Concrete .....	138.56 "
Asphalt .....	81.94 "
Bridges .....	8081 feet

In addition there were completed by State forces 277 miles of surface treated topsoil or gravel, exclusive of the mileage of retreatment work.

Our source of revenue at the present time is derived from a 5-cent per gallon gas tax and a license and title fee. The counties receive 1-cent of the gas tax for the maintenance of county road systems. From the remainder is paid the maintenance and betterment work, administration, debt service on bonds issued in the past, highway patrol, and the surplus is spent on construction.

The present mileage being maintained on the State highway system is as follows:

Asphalt .....	1419 miles
Brick .....	18 "
Concrete .....	2405 "
Dirt .....	1075 "
Gravel .....	330 "
Oil treated, topsoil, sand clay....	1510 "
Penetration macadam .....	120 "
Surface treated gravel.....	181 "
" " macadam .....	190 "
Shale .....	28 "
Topsoil, sand clay.....	1491 "
Bridges, 500 feet and over.....	16 "
Town streets .....	232 "
Total .....	9015 "

Present indications are we will have approximately \$5,000,000 available for new construction, and \$5,000,000 for maintenance and betterments in 1931.



## Arkansas Improving 1,000 Miles Annually

By W. W. ZASS,

Engineer of Construction, Little Rock.

Arkansas faces a particularly difficult problem in road financing, because while the state highway system embraces a mileage considerably greater than the median of mileage of all of the United States, the Arkansas automobile registration is considerably below the median of the other States. The legislative act, under which the State Highway Commission is operating, provided for bond issues in the amount of \$13,000,000 for 1927 and \$18,000,000 for each of the years 1928, 1929 and 1930, plus an additional issue of \$7,500,000 for use solely in construction of State-owned toll bridges. In addition to the proceeds from the sale of bonds, the Commission's total annual revenue includes the receipts from automobile registration and gasoline tax, and the funds received in the form of Federal Aid.

It is contemplated that the 1930 construction program includes: 250 miles of earthwork and minor drainage structures; 300 miles of gravel surfacing; 150 miles of high type paving; 250 miles

of bituminous treated surfacing, and 40,000 lineal feet of bridges of all types. During the previous year 1092 miles of all types of roads and 49,428 lineal feet of bridges were constructed.

When the State system of highways in Arkansas was first designated in 1923 there were placed under State supervision 6637 miles of roads, of which 7 per cent were paved, 32 per cent graveled or of similar type, 32 per cent graded and drained and 29 per cent unimproved. Since then the total mileage of the system has increased to 8900 miles, of which as of November 30, 1930, 17 per cent was paved, 61 per cent graveled or of similar type, 15 per cent graded and drained and 7 per cent unimproved. Estimates place the mileage of public roads in Arkansas at 75,000.

Editor's Note—Since receiving the above, information has been received that the State Note Board of Arkansas will open bids January 15 on a \$15,000,000 issue of short term highway notes. On the same date bids are to be opened for road work involving an estimated expenditure of \$2,000,000.

have been hard surfaced, 1715 miles of which will be of the standard pavement type and 410 miles of the bituminous surfacing type. Also, 2925 miles will have been improved with gravel, sand-clay, top-soil, etc. Only 950 miles remain unimproved.

The portion of the above mentioned work done in 1930 approximates 370 miles of standard pavements, 80 miles of bituminous surfacing and 125 miles of earth types. The total expenditure for construction during 1930 is estimated at \$12,600,000.

The 1931 construction program calls for an expenditure of \$20,000,000 on the State highway system. This amount of money will build approximately 550 miles of standard pavement, 260 miles of bituminous surfacing, 280 miles of earth type, and 24,000 feet of bridges.

In 1930 the Department awarded contracts for 32,501 feet of bridges at an estimated cost of \$2,341,000.

During 1930 the Highway Department estimates its expenditures for maintenance of the State highway system to be \$2,128,000, of which \$1,699,000 is for maintenance proper, \$144,000 for supervision, and \$385,000 for new equipment.

## \$20,000,000 for South Carolina Roads in 1931

By CHARLES H. MOOREFIELD,  
State Highway Engineer, Columbia

The 1929 General Assembly of South Carolina authorized the issuance of State highway bonds in the amount of \$65,000,000 for completion of the State highway system, with the provision that not over \$20,000,000 be issued in any one year. This action of the legislature was contested by the opponents of the bill and it was not until April, 1930, that all litigation had been disposed of and the first block of bonds in the amount of \$10,000,000 sold. Another block of \$10,000,000 was sold in December.

Last year, being the inaugural year for the bond program, much activity was seen in the construction division. During the year contracts were made which involved an estimated expenditure of \$27,960,000, which is for the construction of 795 miles of standard pavements, 246 miles of bituminous surfacing, 459 miles of earth type roads, and 32,501 feet of bridges.

The State Highway System of South Carolina is comprised of approximately 6000 miles of roads and on December 31, 1930, it is estimated that 2126 miles will

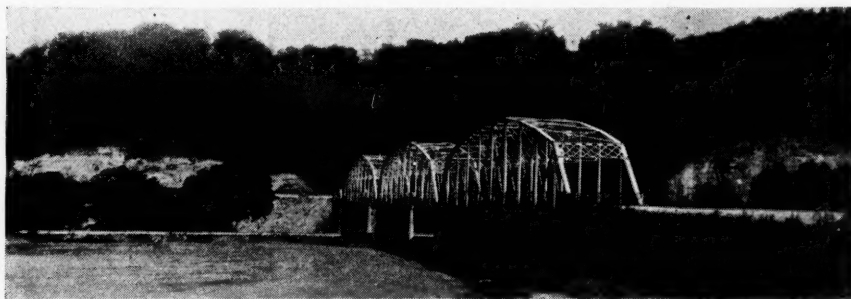
## 1410 Miles Improved in Oklahoma Last Year

From Figures Released by A. R. LOSH,  
Chief Engineer, Oklahoma City

Contracts awarded and completed during 1930 in Oklahoma involved the construction of 1,410.55 miles of roads. Of this mileage 239.749 miles were concrete; 19.689 miles, asphalt on gravel; 18.7 miles, bitulithic treatment on gravel roads; 876.442 miles of oiled gravel roads, and 87.63 miles of untreated graveled roads. Earth roads totaling 168.61 miles were brought to standard grade and drainage. The 269.259 miles of work let during 1930 and yet to be completed includes 35.869 miles of concrete; .5 mile of asphalt on concrete; 1.24 miles of asphalt on gravel, and 231.662 miles of grading and drainage work.

On November 15 the highways completed and under way in the Oklahoma State Highway System amounted to 6418 miles, of which concrete roads totaled 1285 miles; brick, 39 miles; asphalt, 211 miles; gravel treated with bitulithic, 44 miles; gravel treated with oil, 865 miles; untreated gravel, 857 miles; standard graded and drained, 791 miles, and other earth roads, 2259 miles. A total of 97 miles of highway construction was let to contract on November 15.

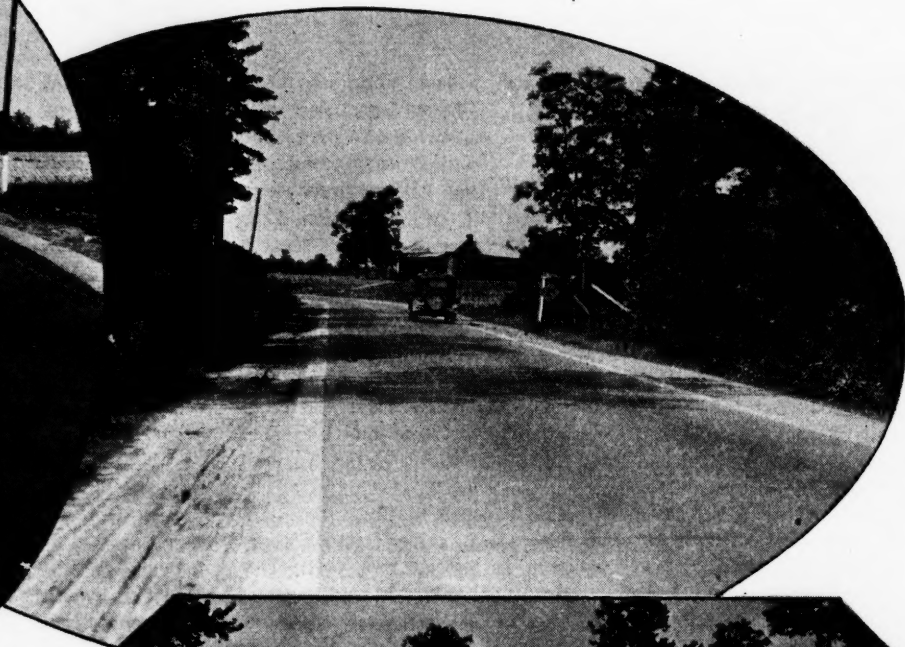
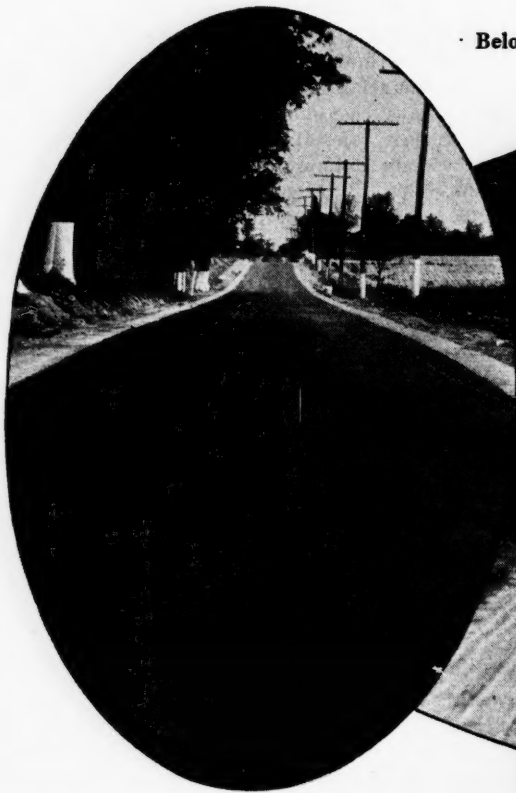
The highways completed and under



A Steel Bridge on Reinforced Concrete Piers Over Sandy River, in Kentucky



Below—A Bituminous Concrete Highway Constructed on a Concrete Base in South Carolina on U. S. Route No. 1



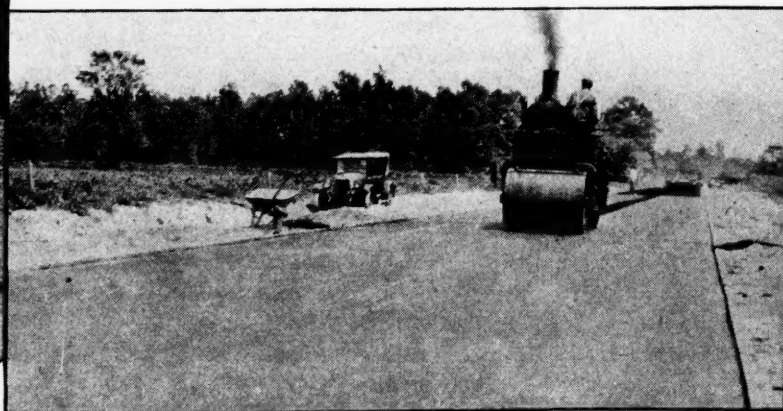
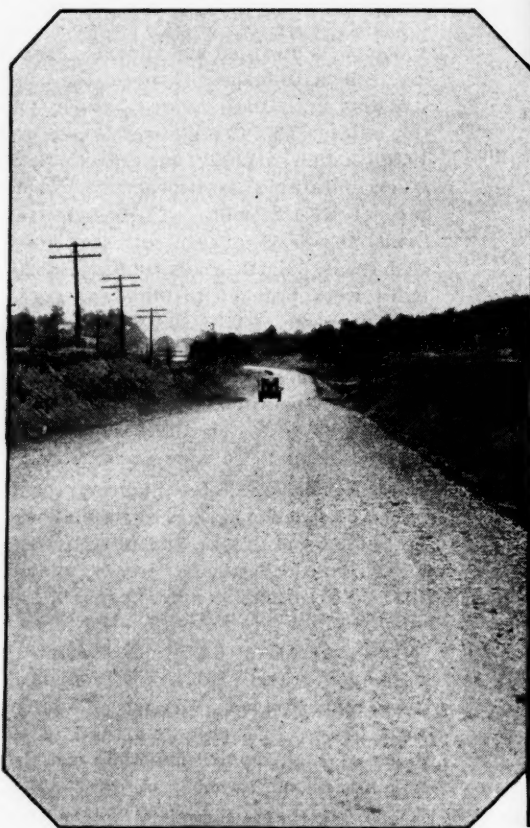
Above—Section of a Black Top Experimental Road Constructed on the Glenburnie to Westport Highway Near Baltimore

Below—A Completed Gravel Surface in Alabama

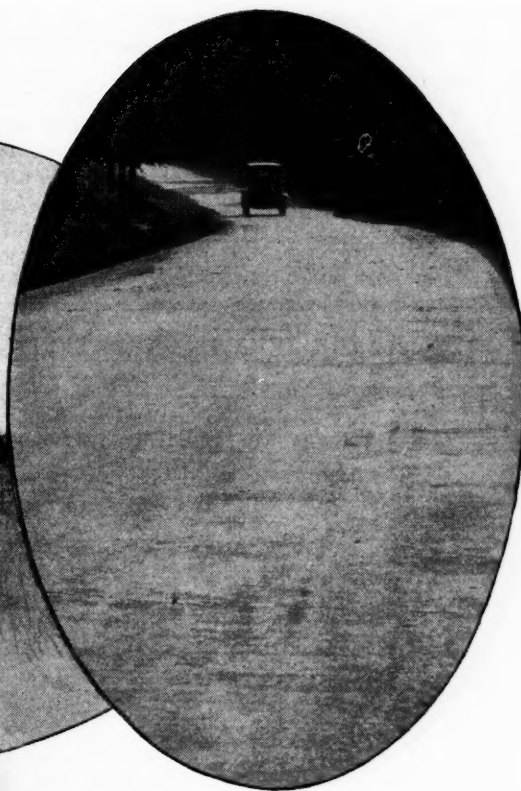
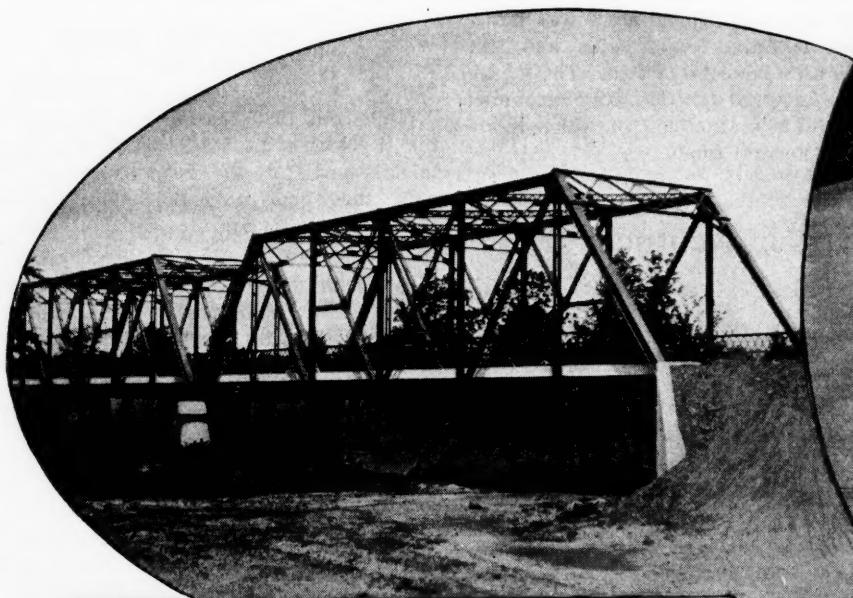


Above—A Two-Inch Retread Surface Laid by State Forces in Hampshire County, West Virginia, on an Oiled Shale Base

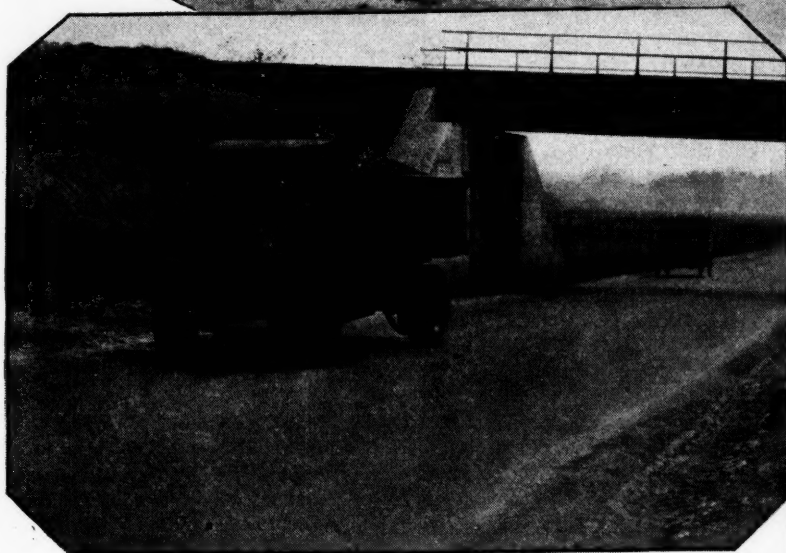
Below—Sand Asphalt Construction Under Way in North Carolina



Below—Cave Creek Bridge on U. S. Route No. 64 in Oklahoma



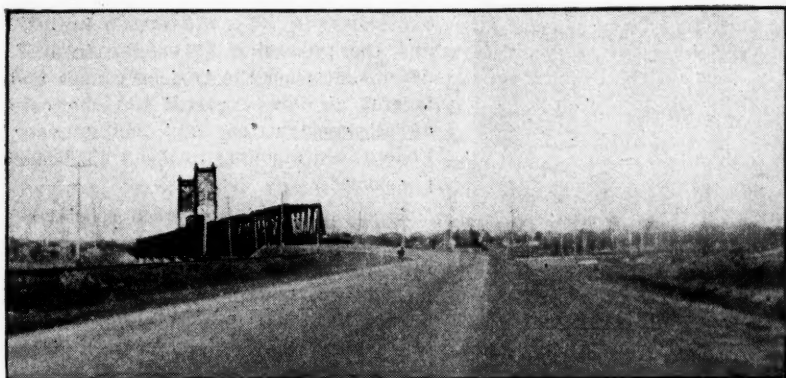
Above—Section of Bogalusa-Franklinton Highway Completed Recently by Louisiana Highway Commission



Below—Bituminous Treated Lime Rock on U. S. Route No. 90 in Florida

Above—A Bituminous Concrete Pavement in Virginia

Below—Concrete Pavement Approach to the Arkansas River Bridge in Sebastian County, Arkansas





construction at January 1, 1930, including the 1410 miles contracted for and completed during the year amounted in miles to 2155. This figure represents 279 miles of concrete; .5 mile of asphalt on concrete; 20 miles of asphalt on gravel; 17 miles of bitulithic-treated surface on gravel; 876 miles of oil-treated gravel; 117 miles of untreated

gravel roads, and 842 miles of grading and drainage work.

Federal Aid mileage added to the highway system during the year totaled 178.4 miles, of which 119.3 was designated as initial construction and 59.1 miles as stage construction. The expenditure involved for this work amounted to \$3,764,985, \$1,697,687 of which represented Federal funds.

## \$43,000,000 in Two Years in Kentucky

From Report Issued by  
H. D. PALMORE, Chief Engineer,  
Kentucky State Highway Department, Frankfort.

Revenues for the Kentucky State Highway Commission are made available for two year periods beginning April 1 of each even year. For the period beginning April 1, the amount available amounted to \$43,338,000 of which \$4,006,000 is carried over from the previous period. The balance is composed of \$30,778,000 in the form of a 5-cent gasoline tax, motor license, truck ad valorem, and bus tax, 1931 and 1932 Federal Aid appropriations, flood relief, and county donations; \$554,000 in other revenues such as toll collections, and \$8,000,000 proceeds from the sale of toll bridge bonds.

Of the \$12,875,000 expended during the period April 1, to December 1, 1930, \$8,297,000 went for construction, \$2,596,000 for maintenance, \$771,000 for equipment, \$230,000 for administration and \$611,000 for engineering purposes. The \$8,297,000 construction expenditure includes approximately \$2,000,000 for completion of work under way on April 1. Work authorized for the April-December period represented \$20,230,000, of which \$2,050,000 was designated for 208.8 miles of grading and drainage; \$628,000 for bridges other than toll structures; \$2,386,000 for 392.8 miles of traffic bound macadam; \$312,000 for 93.4 miles of gravel; \$111,000 for 10.2 miles of water-bound macadam; \$215,000 for 328.6

miles of surface treatment; \$659,000 for 234.3 miles of retread (maintenance budget); \$682,000 for 96.8 miles of retread (construction budget); \$2,190,000 for 99.3 miles of rock asphalt, and \$4,990,000 for 234.5 miles of reinforced concrete paving. Toll bridge contracts, also included in the foregoing total, amounted to \$6,007,000.

For the remainder of the biennial period to April 1, 1932, the program involves a \$30,463,000 expenditure, including \$13,393,000 for construction; \$5,500,000 for maintenance; \$800,000 for equipment; \$1,300,000 for toll bridges.

## Mississippi Makes Little Progress

By J. D. MONETTE,  
Office Engineer, Jackson

Our construction during 1930 has been very limited, due to lack of funds. We have completed 34 miles of grading and drained roads at an average cost of \$10,000 per mile, and we still have 30 miles of graded and drained roads carried over until 1931. We propose to pave approximately 75 miles and grade and drain 50 miles of road during 1931.

## Missouri to Improve 2580 Miles

By T. H. CUTLER, Chief Engineer,  
Jefferson City

While the 1930 season was too dry for the farmer it was very favorable in Missouri for the road contractor, with the single exception that some paving outfits had trouble getting water during a few weeks of midsummer. Springs and small streams dried up so that it was necessary to pump water long distances at added expense. In general the 1930 construction in Missouri was very satisfactory and the following table indicates the accomplishments in actual mileage built January 1, 1930 to date.

Type	Miles
*Graded Earth .....	350.361
Gravel Surfacing .....	806.782
20-foot Concrete Pavement.....	364.685
18-foot Concrete Pavement.....	37.095
10-foot Concrete Pavement.....	14.009
9-foot Concrete Pavement.....	46.919
Miscellaneous Types .....	7.102
Total .....	1626.953

\*This includes only projects for grading alone and does not measure the mileage of grading in contracts involving any type of surfacing also.

The program anticipated for 1931 has recently been compiled and is indicated by the following table.

Type	Miles
Graded Earth .....	1297.309
Gravel Surfacing .....	924.954
Oil Treatment .....	5.454
Bituminous Retread .....	21.414
10-foot Concrete Pavement.....	134.619
20-foot Concrete Pavement.....	192.475
40-foot Concrete Pavement.....	10.867
Total .....	2587.092

We believe 1930 represents the peak load of construction costs in Missouri, although 1931 should be a close second. After next year we expect a gradual decline until the completion of the system in 1937.

There are three principal sources of finances for highway purposes in Missouri; basic revenue, bond proceeds, and federal aid. Basic revenue chiefly includes gasoline tax, license fees, and corporation filing fees. Bond proceeds at this time are from a \$75,000,000 issue. Of this amount \$27,500,000 has been previously sold, \$5,000,000 were sold this month, and we anticipate selling \$17,500,000 in 1931, \$15,000,000 in 1932, and the remaining \$10,000,000 in 1933. After that time the basic revenues and federal aid are expected to take care of all construction and maintenance. Federal aid amounts to about \$3,900,000 per year.

A corps of engineers is on special assignment in charge of supplementary or farm to market construction. The supplementary system involves approximately 100 miles in each county and is, of course, tributary to the state highway system.



2½-Inch Brick on Compacted Macadam Pavement in Stephenville, Texas



## \$20,000,000 for 1931 Road Program in West Virginia

By H. J. SPELMAN,  
Chief Engineer, Charleston

West Virginia's 1931 program for the construction and maintenance of State roads contemplates the expenditure of a total of over \$20,124,000. Construction funds available for new contracts include \$10,000,000 in State road bond proceeds, and \$1,324,680 of Federal Aid. Construction funds available for the completion of projects carried over from 1930 total \$5,800,000. Maintenance expenditures are estimated at \$3,000,000.

During the year 1930, total construction expenditures on the State system were \$13,403,000, and total maintenance costs \$3,530,000.

State road mileages completed in 1930 reached a total of 571.67. The mileages by types were as follows: Concrete 102.39; bituminous macadam 55.95; rock asphalt 7.44; bituminous concrete 5.76; waterbound macadam 50.94; gravel 73.77; shale 18.13; stone base 50.12; bituminous retread 101.88; graded and drained 105.29.

The following mileages under contract and partially completed are being carried over into 1931: Concrete 39.18; bituminous macadam 3.40; gravel 7.90; shale 19.70; stone base 5.00; grading and draining 142.00.

Twenty-nine bridges of greater than 20-foot span were completed in 1930 on the State system, and seven under contract are being carried over into 1931.

No program of mileages of the various types has been outlined for 1931, but both grading and paving will go forward vigorously and systematically.

The mileage of the State system was increased during the year by the designation of new routes or parts of routes totaling some 113 miles, bringing the number of miles in the system up to 4151.

The standard width of grading on State roads has been increased from 26 feet to 30 feet, and most of the paving done in the last year has been at least 18 feet wide. There is also a marked tendency to obtain wider rights of way whenever practicable.

At an extra session held in the spring, the Legislature authorized the sale of the remaining \$15,000,000 of State road bonds. Five millions were sold later in the year, leaving \$10,000,000 to be sold in 1931.

## \$31,000,000 Expended in 1930 for Roads in Tennessee

By JNO. L. NEELY, JR., Office Engineer,  
Department of Highways and Public Works, Nashville.

The Department of Highways and Public Works has completed by contract construction, by types, the following mileage:

Grading and drainage.....	869.48 miles
Gravel .....	20.00 "
Surface treatment.....	3.00 "
Bituminous macadam.....	15.70 "
Natural sandstone rock asphalt	217.14 "
Cement concrete .....	302.06 "
Miscellaneous .....	41.29 "
Bridges .....	11.48 "

The "miscellaneous" item includes widening, reconstruction of existing roadway, etc., to which no definite classification of improvement can be given.

This improvement has been made at a total cost of \$31,432,364.12.

In addition to the above, the Department has, with its own forces, improved 643 miles by grading and drainage, surface treatment or gravel, and has constructed several small bridges.

Under the provisions of Chapter 55, Public Acts of 1929, which provides for the maintenance of rural roads on the Secondary and District System from the proceeds of one cent of the automobile gasoline tax, the Department is at present maintaining 12,255 miles of second-

ary and district roads, bringing the total mileage under the supervision of the State Highway Department to approximately 20,000 miles.

The current year has seen the completion and opening to traffic of 16 toll bridges authorized by the acts of the 1927 and 1929 Legislatures. The Department has under construction at present a toll bridge over the Cumberland River at Ashland City, which is about 80 per cent complete and has yet to build three special bridges—one located at Fort Blount on the Cumberland River, one between Gallatin and Murfreesboro near Laguardo, and one on State Highway Route No. 30 between Dayton and Decatur over the Tennessee River.

As the Legislature meets in January, and as the Department of Highways and Public Works is financed from one biennium to the next by the Legislature, it is impossible at the present time to give any definite idea as to our program for the next two years. We hope, however, to have a program of approximately \$25,000,000 for the year 1931, but this is dependent upon legislative action.

## \$17,600,000 Expended in 1930 for Virginia Road Work

From Report Made by H. G. SHIRLEY,  
State Highway Commissioner, Richmond.

It is estimated that during the fiscal year from July 1, 1930, to June 30, 1931, the expenditure for highway work in Virginia will approximate, with a few changes because of the drought relief funds appropriated by the Federal Government, the \$17,646,000 total for the fiscal year ending June 30, 1930. This amount was divided into \$11,784,590 for Federal and State roads construction, \$5,510,136 for Federal and State roads maintenance, \$337,367 for salaries and expenses, and \$14,876 for the Highway Commission fund.

On July 1, 1930 the State had under construction 664.363 miles of various types of roads. This mileage represented an allocation of \$13,347,183. Included in the 664.363 miles were: 15.754 miles of concrete; 1.606 miles of asphalt; 80.537 miles of bituminous maca-

dam; 170.258 miles of surface treated macadam; 208.124 miles of surface treated gravel and soil, and 188.084 miles of grading and drainage.

During the next two years (beginning July 1, 1930) approximately 1800 more miles of road will be added to the Virginia highway system, bringing the total mileage to 9000 miles. Much of this added mileage will require conditioning.

In addition to its road building and maintenance activities the State Highway Commission has assisted various towns and cities in the construction of airplane landing fields. The State has given this aid in connection with 15 fields now in a condition for landing aircraft. Engineers for the purpose are furnished free of cost and equipment at the actual cost of operation.

## \$31,500,000 for Texas Highways This Year

By GIBB GILCHRIST,  
State Highway Engineer, Austin

The Texas Highway Department awarded construction contracts during 1930 amounting to \$20,644,000 covering 993 miles grading and drainage structures and \$4,415,000 for bridges, concrete paving 341 miles, and 274 miles of asphalt paving on macadam or concrete base. Work completed during 1930 is greater than the amount of contracts awarded and is as follows: Grading and drainage structures on 1,056 miles at cost of \$8,970,000; concrete paving, 671 miles costing \$16,780,000; paving of other types, 297 miles, costing \$3,456,000; bridges, \$2,656,000. The total expenditure approximated \$32,000,000. The above is for fiscal year September 1, 1929 to September 1, 1930. The calendar year is considered the same as expenditure is approximately \$30,579,000.

Maintenance contracts for single and

double asphalt surface treatment involved approximately 500 miles at a cost of \$1,000,000. Expenditure for maintenance in 1930 involved a total outlay of approximately \$9,000,000 for general maintenance, \$2,000,000 for reconstruction and betterment work.

Contemplated work in 1931 involves grading and drainage structures approximating 700 miles at a cost of \$6,000,000; concrete paving will total approximately 650 miles costing approximately \$16,000,000; asphalt paving and base work will involve about 250 miles estimated to cost \$2,500,000; bridge work will involve an expenditure of approximately \$5,000,000. Maintenance contracts for asphalt topping and betterment will involve an expenditure of about \$2,000,000 making total expenditure for 1931 approximately \$31,500,000.

## Alabama Pushes Big Program

By L. M. DINSMORE,

State Highway Department, Montgomery

Alabama State Highway Department completed during 1930 about 80 miles of graded roads, 91 miles of sand-clay roads, 375 miles of gravel roads, 60 miles of cement concrete roads, and 17 miles of rock asphalt roads. We will carry over into 1931 construction 109 miles graded, 51 miles sand clay, 184 miles gravel, 84 miles cement concrete, and 36 miles surface treatment.

In January we will open bids for approximately 260 miles of paving involving expenditure of about \$4,000,000.

The Alabama State Bridge Corporation has completed all but one of the 15 state-owned toll bridges in this state. These involve expenditure of approximately \$5,000,000.

## \$14,000,000 Expended in Maryland in 1930

By H. D. WILLIAR, JR.,  
Chief Engineer, Baltimore

During 1930 \$6,000,000 was expended by the Maryland State Roads Commission for the construction of 281 miles of roadway. The mileage includes 173 miles of concrete, 46 miles of penetration macadam, 56 miles of gravel and 6 miles of asphalt streets in Baltimore City.

About 186 miles of existing roads were widened and improved by the construction of concrete shoulders at a cost of \$4,000,000. Contracts aggregating \$1,700,000, were awarded for the construction of 33 major bridge projects and for the elimination of 16 grade crossings. About \$2,300,000 was expended for gen-

eral maintenance on the state road system.

Of the funds expended, \$1,052,000 was received from the Federal Government, \$2,250,000 was derived from State and county bond issues and \$8,250,000 from the gasoline tax and motor vehicle receipts. These figures only represent income for the year but do not include unexpended balances at beginning. The outstanding project was the completion of the widening of the Baltimore-Washington Boulevard, U. S. Route 1, between the Baltimore City limits and Hyattsville to a width of 40 feet. This highway carries an average daily traffic of approximately 6000 vehicles and a peak traffic of 18,000 to 20,000 vehicles.

## 755 Miles Comprise 1931 Program in Georgia

By M. E. Cox,  
Contract Engineer, East Point.

It is contemplated that 755 miles of roads and bridges will be constructed during 1931 under Georgia's highway program. The type of work and the mileages included under this plan are: Concrete, 250; surface treatment on limerock base, 150; sand asphalt, 75; other types, 40; grading and drainage, 200, and bridges, 40 miles.

The work done by the State Highway Board during 1930 involved 726 miles of roads and bridges and included: 135 miles of concrete pavement; 21 miles of 2-inch bituminous top on concrete base; 13 miles of 2-inch bituminous top on limerock base; 125 miles of surface treatment on limerock base; 25 miles of bituminous concrete; 40 miles of surface treatment; 125 miles of grading and drainage; 42 miles of bridges, and the 200 miles of surveyed and projected highways.

Funds for construction of Georgia highways are raised by a six cent gas tax, of which the Highway Department get four cents. A motor vehicle tax also provides for construction and for maintenance.

The regular allotment of about \$4,000,000 for Federal Aid work will be supplemented by about \$2,000,000, the latter amount to become available if the former work is completed by July 1.

## \$11,000,000 Expended in 1931 for Florida Roads

By B. M. DUNCAN,  
State Highway Engineer, Tallahassee

During the year 1930 the State Road Department of Florida has maintained 3,700 miles of roads of all types and has paved 299 miles and graded preparatory to paving 150 miles. The total expenditures for maintenance and betterments has been \$1,751,000 and of construction \$9,249,000. During the year contracts were let for 324 miles of paving, 6.96 miles of grading and 6,769 feet of

bridges of which amount 3,988 feet were concrete. The contract cost of bridges amounted to \$813,204.92 and the paved roads \$6,175,980.15 and graded roads \$94,262.26. The budget for 1931 is not yet adopted but it is expected that our receipts will be between \$10,000,000 and \$12,000,000 in 1931, which amount will be spent on construction and maintenance.



# Automobile Industry Facts and Figures

Compiled by the National Automobile  
Chamber of Commerce, New York City

## PRODUCTION

	1928	1929	1930
Cars and trucks produced in U. S. and Canada.....	4,630,000	5,651,000	3,505,000
Cars .....	4,044,000	4,846,000	2,943,200
Trucks .....	586,000	805,000	561,800
Production of closed cars.....	3,441,600	4,218,000	2,688,000
Per cent closed cars.....	85%	87%	91%
Wholesale value of cars.....	\$2,630,500,000	\$2,952,900,000	\$1,771,200,000
Wholesale value of trucks.....	\$415,320,000	\$531,000,000	\$388,400,000
Wholesale value of cars and trucks combined.....	\$3,045,820,000	\$3,483,900,000	\$2,159,600,000
Average retail price of cars.....	\$876	\$812	\$800
Average retail price of trucks.....	\$955	\$877	\$922
Wholesale value of parts and accessories for replacements and service equipment .....	\$950,000,000	\$920,000,000	\$527,800,000
Tire shipments .....	78,500,000	75,000,000	52,700,000
Wholesale value of rubber tires for replacement.....	\$670,000,000	\$600,000,000	\$429,000,000
Motor vehicles, accessories, service equipment and replacements of parts and tires.....	\$4,665,820,000	\$5,003,900,000	\$3,116,400,000

## REGISTRATION

	1928	1929	1930
Motor vehicles registered in U. S. (from state reports).....	24,750,000	26,400,000	26,718,000
Motor cars.....	21,630,000	23,030,000	23,200,000
Motor trucks.....	3,120,000	3,370,000	3,518,000
Per cent gain in registration.....	.....	8%	8%
World registration of motor vehicles.....	31,725,000	34,700,000	35,518,000
Per cent of world's automobiles in U. S. ....	78%	76%	75%
Motor vehicle registration on farms.....	5,450,000	5,800,000	5,700,000
Miles of surfaced highway.....	615,000	660,000	700,000
Total miles of highways in U. S. ....	3,013,584	3,016,281	3,024,233
Highway and street expenditures.....	\$1,500,000,000	\$2,000,000,000	\$2,200,000,000
Persons employed in motor vehicle and allied lines.....	4,110,000	4,300,000	4,700,000
Gasoline taxes.....	.....	\$415,000,000	\$515,000,000
Total taxes on motor vehicles.....	\$785,386,000	\$925,000,000	\$1,010,000,000

## AUTOMOBILE'S RELATION TO OTHER BUSINESS

	1928	1929	1930
Number of carloads of automotive freight shipped over railroads.....	3,600,000	3,600,000	3,080,000
Rubber used by automobile industry.....	85%	85%	82%
Plate glass used by automobile industry.....	60%	67%	55%
Iron and steel used by automobile industry.....	15%	19%	15%
Copper used by automobile industry.....	12%	15%	14%
Lumber hardwood, used by automobile industry.....	.....	18%	15%
Lead used by automobile industry.....	.....	27%	24%
Gasoline consumption by motor industry.....	80%	80%	80%
Gasoline used by motor vehicles (bbls.).....	258,571,000	297,000,000	310,000,000
Crude rubber used by motor industry (lbs.).....	814,000,000	913,920,000	686,000,000
Cotton fabric used in tires (lbs.).....	299,500,000	287,000,000	195,770,000

## MOTOR TRUCKS AND MOTOR BUS USE

	1928	1929	1930
Motor trucks in use.....	3,120,000	3,370,000	3,518,000
Motor truck owners.....	2,271,000	2,460,000	2,550,000
Motor buses in use.....	92,000	95,000	95,000
Consolidated schools using motor transportation.....	14,850	16,500	17,000
Buses used by consolidated schools.....	.....	43,000	47,500
Buses used by street railways.....	9,900	11,500	13,300
Buses used by steam railroads.....	1,250	1,900	3,087
Street railways using motor buses.....	365	300	385
Steam railroad using motor buses.....	67	70	67
Railroads using trucks as part of shipping service.....	59	75	75
Motor trucks used by steam railroads.....	.....	7,000	7,000
Motor trucks used by Railway Express Agency.....	.....	.....	9,940

## FOREIGN SALES

	1928	1929	1930
Number of American motor vehicles sold outside U. S. (U. S. exports and output in U. S. owned Canadian plants).....	810,000	1,015,000	561,000
Per cent increase in foreign sales.....	26%	23%	—44%
Per cent of production sold outside U. S. ....	17.5%	18%	16%
Value of motor vehicles parts and tires exported from U. S. and Canada.....	\$680,600,000	\$757,400,000	\$344,700,000
Number of motor vehicles imported.....	520	710	625

## MOTOR VEHICLE RETAIL BUSINESS IN U. S.

	1928	1929	1930
Total car and truck dealers.....	53,700	56,300	51,514
Public garages.....	51,600	51,200	50,200
Service stations and repair shops.....	95,400	95,800	100,300
Supply stores.....	79,100	76,600	80,000
Gasoline filling stations.....	317,000	320,000	350,000

(—) Decrease



## Outlook for Ornamental Metal Trades

By WILLIAM A. BOESCHE, President,  
National Association Ornamental Iron,  
Bronze and Wire Manufacturers

Last year was a significant one for the ornamental iron industry, in the fashioning of artistic ornamental metal designs for building construction and decorations. No better evidence can be found than in the approximate volume of gross business of \$250,000,000. This is little short of remarkable in view of the general decline in building activities.

During the past few years the metal worker has shared more and more in the equipment of new buildings with stairways, grilles, balconies, chandeliers, store fronts, marquises, spandrels, etc., an indication of the popularity of iron-work products among builders, architects and owners who might have been satisfied with cheap substitutes. This leads to the expectation that 1931 will prove a good year for the industry, since it is reasonable to assume the past year would have meant a larger volume of business had conditions been normal.

If private enterprise follows the example of the government in speeding up building we have every reason to believe we are approaching a building boom that will be reflected in a quickening of almost every line of endeavor. In that event I look for some swift changes in architectural style, new fashions that otherwise would receive gradual expression in the normal course of building activity. The trends of today will become the realities of tomorrow.

### Drainage Congress

Topics of national importance and of special interest to the South will be discussed at the twentieth session of the National Drainage, Conservation and Flood Control Congress, at Dallas, Texas, February 18-20, with headquarters at the Baker Hotel. W. G. Potter is president of the Congress, with offices at 220 South State street, Chicago.

Among the speakers scheduled to participate are: Secretary of War Hurley, who will detail the plans of the Government for Lower Mississippi flood control; Roy Miller, Corpus Christi, Texas, "The Gulf Intracoastal Canal"; O. D. Kulicka, Greenville, Miss., chief engineer of the Washington County Drainage Commission; Carroll E. Williams, construction news editor of the MANUFACTURERS RECORD, "South's Reclamation Work in 1930"; B. F. Williams, Austin,

state reclamation engineer; Senator Tiltonson, Austin, manager of the Brazos River Conservation and Reclamation district, and L. M. Lawson, El Paso, "Proposed Rectification of the Rio Grande River, and Its Consequences."

B. F. Williams is first vice-president of the Congress; William Crooks, Little Rock, Ark., second vice-president; E. G. Jacques, Kansas City, Mo., treasurer; E. V. Willard of St. Paul, G. J. Bell of Topeka and Mr. Kulicka, directors.

### Public Utilities Confident

Central Power and Light Company.  
San Antonio, Texas.

*Editor Manufacturers Record:*

In this developing country, the utilities particularly face the need of developing their holdings, even in years when in other sections business and construction activities mark time.

In 1930, the Central Light & Power Company continued ahead with normal development plans and we feel that this work, extended over a wide area, has aided materially in stabilizing this section of the state.

Our plans for 1931 provide for continued normal development, carrying out all essential projects necessary to continue rendering adequate and satisfactory service to all users of utility service.

This particular area, south and southwest Texas, has such wide diversification of agricultural revenues that we can look forward optimistically to the continued improvement of conditions

generally. This view is further strengthened by rather definite plans for expansion and development, which are being made by other corporations and by the municipal, county and state officials.

E. B. NEISWANGER, President.

## \$16,648,000 TELEPHONE IMPROVEMENTS

Chesapeake and Potomac Companies Announce 1931 Budget

Gross expenditures in 1931 for extensions and improvements to the facilities of the Chesapeake and Potomac Telephone Companies operating in the District of Columbia, Maryland, Virginia and West Virginia will approximate \$16,648,000, according to official estimates. Major items will embrace miscellaneous projects to cost \$6,491,000; facilities on subscribers' premises, \$5,130,000; switchboards and central office equipment, \$3,369,000, and land, buildings and additions, \$1,658,000. Construction planned for the District of Columbia will involve an outlay of \$3,462,000, while the Chesapeake and Potomac Telephone Company of Baltimore will expend \$4,840,000 in Maryland. In Virginia the Chesapeake & Potomac Telephone Company of Virginia will expend \$3,916,000, it is estimated, and in West Virginia the Chesapeake & Potomac Telephone Company of West Virginia will expend \$4,430,000.

## Portland Cement Shipments

FOR the first 11 months of 1930 shipments of portland cement totaled 153,056,000 barrels, a drop of 6½ per cent from the same period of 1929, according to William M. Kinney, vice-president and general manager of the Portland Cement Association. Mr. Kinney declares that this is a good showing in view of the fact that general construction has decreased by a much greater percentage. For the 12 months ended November 30, 1929, 66.8 per cent of factory capacity was utilized, while in the corresponding period for 1930 62.6 per cent was used.

Continued activity in concrete road building was an outstanding feature of the year, according to Mr. Kinney. Awards for concrete roads totalled 102,924,000 square yards to December 1, a gain of 16.5 per cent over the previous record year of 1928. There was a decrease in street paving.

Mr. Kinney asserts that there is every

indication road construction will continue at its present pace throughout the coming year and that street building will show positive improvement. He points out that the present lowered costs make possible tremendous savings which cannot fail to attract many communities where paving is badly needed. Municipalities realize that old streets, which were not designed for motor traffic, are too costly to maintain, and that it is economy to replace them with heavy duty hard surfacing.

Mr. Kinney also cites the adaptability of concrete to airport paving and construction purposes, and feels that the use of concrete track support for metropolitan and railroad terminals indicates that it may be utilized as a roadbed for railroads. Exhaustive tests, he says, have shown that concrete can serve as an excellent covering for oil and gas pipelines for the prevention of corrosion.

# IRON, STEEL AND METAL MARKET

## Steel Tendency Is Toward Improvement

Pittsburgh, January 5—[Special.]—Leading steel producers have been inclined to predict improvement in the steel trade to begin in February. President Frank Purnell of Youngstown Sheet & Tube Company, for instance, predicted last week that there would be a gradual upturn "by the middle or latter part of February." Such predictions apparently ignore the uniform precedents of the last nine years, each of which has shown a decided increase in steel production in January, over the preceding December. When December was a particularly poor month the percentage increase over December was all the more marked. While it may seem curious, it is a fact that taking the last eight years the early portions of those years have hung together much better than the late portions, while on an average the early portions have been much better than the late portions. Several of those years had poor second halves, notably 1923, 1927 and 1930, but none of them had a very poor first half, not even 1930.

When conditions all around have been so shaken up, guesses are particularly likely to go wild, but there are very good reasons, from precedent and from recent developments and from more or less definite prospects in certain details of steel consumption, to guess that steel demand will rise for say three or four months, beginning with the present week, and that unless there is a very substantial and permanent improvement in general business conditions steel activity will then begin to fall off as summer is approached.

A really fair steel mill operating rate is not to be expected even at the prospective seasonal peak but it seems altogether probable that the worst has been passed. In advance of the official report of steel ingot production in December an estimate may be made that daily steel ingot production during the month averaged about half way between 35 and 40 per cent of capacity, as carefully ascertained officially for December 31, 1929, and guesses may be made that January will show 40 to 45 per cent, February say 45 to 50 per cent and March say 50 to 55 per cent. That would put March tonnage at fully one-third over the low December tonnage, certainly representing a very substantial improvement, but at the same time by no means a fair operating rate. That is not the whole story, moreover, for a year

ago there was an unusual amount of new construction in steel making and steel finishing in progress or definitely scheduled. Not all is completed now, but prospective capacity may be taken at fully 7 per cent above that found by the last ascertainment, whereby the guess of 50 to 55 per cent for next March, based on old capacity, would represent only 45 to 50 per cent on the coming capacity, which of course has to be reckoned with. Capacity has been increased on account of rivalry between companies and a desire to reduce costs, for practically all efforts to reduce costs involve increases in capacity and a desire on the part of various companies to diversify and round out their lines of finished steel. Accordingly there is much ground to expect that some time there will be very severe competition, not perhaps intentionally of a destructive character, but having the result just the same. The keenness shown to effect consolidations in steel is an indication of there being expectations along that line, for as things have gone in the last third of a century in all business the disposition has been to contrive consolidations when financial conditions were good and securities could be floated easily, not in times such as have prevailed in the last 14 months.

For the present the steel market picture is entirely different. Weak lines have lately been firmed up and the new year was entered with finished steel prices firm or at least very steady in all products for the first time since June, 1929, when wire products and sheets had just begun to weaken. The 1.65c price on bars, shapes and plates is now the market, 1.60c having disappeared with December.

## Rail Mills to Resume in Birmingham District

Birmingham, Ala., January 5—[Special.]—Coming back into its own after a holiday recess the iron and steel trade gives indication a week after the turn of the year that the gradual improvement which leaders have forecast is about at hand. Pig iron sales are in the same old manner, small lots and frequent, with early delivery stipulated in almost every instance. The steady melters are the cast iron pipe manufacturers and they have come into 1931 with fairly good books and with prospects for further business. These interests also inti-

mate that there has been some cleaning up of manufactured stock and there will be warrant for active production. Demand for pig iron comes from other directions and the prospects are not at all dark.

Sales of pig iron for the first quarter are not voluminous but there is every indication that steady melt is to follow. The home base price is still held at \$14, No. 2 foundry, though a little weakness was reported recently. Small tonnage is again moving to other districts on old contracts. Production is being held down. Two blast furnaces are being re-lined and otherwise improved and three are in condition to take up production at once. In addition to foundry, there is a fairly good stock of basic on hand so that in resumption of operations of the open hearth furnaces on ingot production, there will be no worry as to the crude product.

Resumption in steel mills is now spreading. The Ensley rail mills of the Tennessee Coal, Iron & Railroad Co., including open hearth furnaces, three blast furnaces, ore and coal mines and a number of by-product coke ovens will resume operation January 12, official announcement being made by H. C. Ryding, president of the company. The rail mill shut down in September last because of lagging business. Accumulation of railroad business recently warrants resumption of operation and the production will be at a satisfactory rate for several months. Only old employees of the company are being re-employed.

Reinforcing concrete bars will be in active demand as road building throughout the South takes on impetus with Federal aid. In Alabama alone a considerable amount of construction is being arranged. Much cement is to be required also in road construction, and plants of the Birmingham district have been taking on contracts looking to an active year. The Universal-Atlas Cement Co. plant at Leeds, 20 miles from Birmingham, is resuming operations in the next few days after being closed down in its manufacturing department for several weeks, during which period a large proportion of its product has been moved out. Notwithstanding bright prospects in cement, statistics here show that for every two barrels in demand during the past few years there has been three-barrels construction and as a consequence there has been overproduction.

While tonnage figures in the coal, coke, ore, pig iron and steel circles for the



past year show declines in comparison with the previous year, the resume shows also that there was a large amount of development, betterment, improvement, rounding out of industries and diversification. More than \$10,000,000 was expended and numerous smaller industries were located in the state. Development and betterment is still under way and other work is in the offing. Some of the development has been in the raw material end of the industrial district and announcement is made now that greater quantities and better production is possible at mines and quarries. This is true also in iron and steel.

The coal trade continues slow, domestic coal a little active because of weather conditions. The coke market is picking up as various iron and steel works resume operations.

The scrap iron and steel market is still slow though reports show that during the past year there was a most liberal amount of old material used in both iron and steel foundries and mills.

#### PIG IRON QUOTATIONS

No. 2 foundry, 1.75 to 2.25 per cent silicon, \$14.00; No. 1 foundry, 2.25 to 2.75 per cent silicon, \$14.50; iron of 2.75 to 3.25 per cent silicon, \$15; iron of 3.25 to 3.75 per cent silicon, \$15.50.

#### OLD MATERIAL

Steel rails .....	\$11.00 to \$12.00
Steel axles .....	14.00 to 14.50
Iron axles .....	14.50 to 15.50
Heavy melting steel.....	9.50 to 11.00
No. 1 cast.....	10.00 to 10.50
Stove plate .....	8.50 to 9.50
No. 1 railroad wrought.....	9.50 to 10.00
Car wheels .....	10.00 to 11.00
Tramcar wheels .....	10.50 to 11.50
Machine turnings .....	7.50 to 8.00
Cast-iron borings .....	7.50 to 8.00
Cast-iron borings (chem.)....	12.50 to 13.00
Rails for re-rolling.....	11.25 to 11.75

### Metal Prices Maintain General Steadiness

New York, January 5—[Special.]—The metal industry is starting the new year in a fairly satisfactory condition. In all cases, except one or two, prices are considerably above the low point of 1930. Generally speaking, prices have been steady over the past several days. However, the two silvers have been weak. Commercial bar silver sold at 30¾c per ounce on Tuesday, a new low since prices have been recorded. At the same time quicksilver is \$1 per flask lower, being quoted at the full range of \$104 to \$106 per flask.

The price of copper is one cent per pound above the 1930 bottom level. Zinc is about \$4 per ton higher, while lead is still at the valley point of 1930 at 5.10c per pound, New York. Tin has been selling recently as high as 27c per pound as against 23½c but a few days ago. This is an unusually sharp appreciation of values and was due to plans being vir-

tually completed for the restriction of exports by those countries which produce 90 per cent of the world's tin.

The outlook in the steel and metal industries generally is fairly optimistic. Steel operations did not decline to as low levels as expected during the holiday season and there have been many resurrections of idle plants, indicating an increase of orders. The building industry consumed the most steel in 1930, the automobile industry, which had been in first place in recent years, having slipped back to second place. Much non-ferrous metal is used in building and hence construction work was an important outlet last year.

The per capita consumption of steel declined 27 per cent last year. Though there are no such figures available for the non-ferrous metals it is quite probable that about the same condition holds good there. The metal industry realizes that 1931 will be a year of strenuous competition with steel in many lines. The new alloy steels are usable in lines of products which formerly were made of non-corroding non-ferrous metals. Stainless steel is used now in making works of art, trinkets about the home, decorating buildings and the like.

However, some of the metal trades have their associations for promoting the use of their particular metal, such as the Copper and Brass Research Association and the Lead Industries Association. These will undoubtedly be very active this year in trying to hold present markets and develop new ones. Yet stainless steel contains non-ferrous metals in many instances, particularly nickel.

The domestic price of copper has been advanced to 10½c in the domestic market and 10.80c c. i. f. European ports, for export. Export sales of late have averaged 2500 tons daily, while total export sales for December came to about 31,000 tons. Domestic sales have been averaging about 1000 tons daily.

In the home market the custom smelters have been the only sellers, the large producers keeping out of the market. This they can do since they are booked about four months ahead. However, by the middle of January they will begin to feel the need of orders again.

Copper producers state that production is now well balanced with consumption. However, it will take a definite increase in consumption to cause stocks which are nearly the largest in history to recede. Production of copper in 1930 was 80 per cent that of 1929 but 99 per cent of the average for the previous four years. Total copper shipments in 1930 were 74 per cent of those of 1929, but 85 per cent of the average for the preceding four years. When it is remembered that 1929 was an unusual year, therefore, the showing of the copper industry has not

been so bad. The average price of copper over 1930 has been 13¼c per pound which is also a favorable comparison, except with the years of 1928 and 1929.

Though tin advanced to 27c per pound early in the week it had reacted to 26c later. The plans for restriction of exports are designed to fit supply and demand more closely. However, the American tin trade being solely importers and dealers, as the United States does not produce the metal, are somewhat skeptical of plans engineered abroad, pointing out that restricting exports will not affect the total supply in the world, which after all is the governing factor.

The lead market continues in a rut with prices unchanged. Sales during December were the smallest for the year. However, there has been less than usual contracting for January shipment and this business is now being counted on. Zinc sells at 4¼c per pound, East St. Louis, but demand has been light. Sentiment is optimistic, however, December statistics being expected to be favorable when issued.

### Water Works Association

The 1931 meeting of the executive committee of the Southeastern section of the American Water Works Association will be held at Columbia, S. C., in April. About 250 municipal and water works officials are expected to attend. This section includes Alabama, Georgia, Mississippi and South Carolina. The meeting will cover three days, with a program of technical papers and discussions on problems in planning, financing and distribution systems. Officers of the Southeastern section of the American Water Works Association include H. F. Wiedeman, Atlanta, Ga., chairman; Guy H. White, Columbia, vice-chairman; W. H. Weir, Atlanta, secretary-treasurer. J. E. Gibson, Charleston, S. C., is the Southeastern representative on the national board of directors, George H. Fennell, Detroit, Mich., is president of the American Water Works Association.

### \$800,000 Marble Contract

Washington, D. C.—Contract has been awarded to the Georgia Marble Co., Tate, Ga., by the Consolidated Engineering Co., Inc., Baltimore, the general contractor, for \$800,000 worth of Georgia marble for the new \$7,500,000 House of Representatives office building here. Colonel Sam Tate, president of the Georgia Marble Co., announces that this contract, with work already on hand, will keep his company's quarries and mills operating at full capacity until March, 1932.



# CONSTRUCTION DEPARTMENT and NEW ENTERPRISES

Covering the initial announcements of new undertakings with additional information about enterprises previously mentioned. The date at the end of an item indicates preliminary facts were given in a previous issue.

When writing to a new firm or corporation the name of at least one of the incorporators should be placed on the envelope to expedite its handling by the local postoffice. Mail may be delayed unless complete address is given.

Building and Construction Proposed and Contracts Awarded; Manufacturing, Mining, Power, and Land Developments; Public Works; Transportation; Communication; Financial Enterprises; New Business Opportunities Reported in the Sixteen Southern States.

The Daily Construction Bulletin of the Manufacturers Record gives each business day advance news published in this weekly review. It is invaluable to those requiring prompt information. Subscription price \$40.00 a year.

## Airports, Airplane Plants, Etc.

Ark., Little Rock—U. S. Dept. of Commerce, Lighthouse Bureau, Aeronautics Div., reported, plans radio station, 2 plants 1/4 mi. apart; 125 ft. steel towers; cost about \$10,000; J. A. Walls and S. C. Swisher in charge.

Ga., Atlanta—J. H. Gray, Field Mgr., Candler Field, recommended construction of administration building; cost \$25,000.

La., Shreveport—War Dept., Q. M. Corps, Washington, D. C., reported, having surveys made under supervision of Capt. George E. Lamb, Q. M. Corps, for army air service field across Red River; first expenditure \$50,000; additional funds probably available in next few months will total \$3,000,000. 11-27

La., New Orleans—Dept. of Commerce, Aeronautics Branch, Washington, D. C., reported, plans completion in 1931 of lighting of New Orleans-Atlanta air route and New Orleans Levee Bd. plans development of proposed Lake Pontchartrain airport; development of New Orleans-Atlanta air route will include erection of beacons every 10 miles, 2 emergency landing fields between New Orleans and Mobile, 1 near Bay St. Louis and one on other side of Biloxi; 3 emergency fields between Mobile and Montgomery and 2 between Montgomery and Atlanta; John Klorer, Ch. Engr. of Levee Bd. 12-4

Okla., Tulsa—City, George Watkins, Mayor, reported, plans erection of administration building, may erect additional hangars, etc.

Tex., San Angelo—City defeated airport bonds. 11-27

## Bridges, Culverts and Viaducts

### Proposed Construction

Ala., Birmingham—City, A. J. Hawkins, City Engr., opens bids Jan. 20 for rein. conc. bridge over Village Creek, Ave. W, Ensley, 1650 cu. yd. excavation, 102,000 lb. rein. steel.

Alabama—See Roads, Streets and Paving.

Ala., Gadsden—Etowah County Bd. of Revenue plans building \$125,000 toll bridge over Coosa River, Gilbert's Ferry.

Ga., Atlanta—City, Clarke Donelson, Chief of Construction recommended replacing old Broad St. viaduct with modern bridge costing \$68,000; C. E. Kauffman, Bridge Engr., recommend reconstructing Magnolia St. and Whitehall St. bridges and west approach to Edgewood Ave. bridge; Rex W. LeFevre of Street Dept., recommend new traffic boulevard, costing \$166,000.

Ky., Ashland—State Highway Dept., H. R. Creal, Bridge Engr., Frankfort, advises regarding W. Winchester Ave. overpass, plans now in progress and it will probably be 2 or 3 months before bids will be received.

Ky., Henderson—Louisville & Nashville R. R. Co., W. H. Courtenay, Ch. Engr., Louisville, reported, probably start work in Spring on trestle over Ohio River; plans approved by War Dept., Washington. 5-15-30

Ky., Mayfield—Graves County Court, J. E. Rhew and W. O. Rogers, Judges, plan iron bridge over dredge ditch at Boaz.

Maryland—State Roads Comsn., L. H. Steuart, Sec., Baltimore, has low bid from Phoenix Bridge Co., Phoenixville, Pa., at \$11,003, for bridge, Cont. B175-43, Bare Hills, Baltimore County. 12-18

Maryland—State Roads Comsn., L. H. Steuart, Sec., Baltimore, opens bids Jan. 20 for steel and conc. bridge, approx. 145 ft. between end bents, over tracks of Baltimore & Ohio R. R., Frederick Junction, including all necessary earth approaches, surfacing, etc.

Oklahoma—See Roads, Streets and Paving.

South Carolina—State Highway Comsn. has low bids for 11 bridges. See Roads, Streets and Paving.

Tex., Fort Worth—Missouri-Kansas-Texas R. R. Co. of Texas F. Ringer, Ch. Engr., St. Louis, Mo., start work early in February on underpass on Highway 2 south of here.

Tex., Fort Worth—Texas & Pacific Ry. Co., E. F. Mitchell, Ch. Engr., Dallas, plans calling for bids about Jan. 15 for Main St. underpass.

Tex., Fort Worth—Texas & Pacific Ry. Co., E. F. Mitchell, Ch. Engr., Dallas, prepared agreements as to division of cost of viaducts at Ballinger St. and Summit and Daggett Ave., which will be submitted at once to St. Louis Southeastern Ry. Co. of Texas, W. S. Hanley, Ch. Engr., Tyler, and City, C. E. Carr, Mgr.

Texas—State Highway Comsn., G. G. Wickline, Bridge Engr., Austin, completing plans, call for bids soon for 2 conc. girder bridges, one consisting of 10 28 ft. 5-in. conc. girder spans, 285 ft. long; other 171-ft. conc. girder bridge, consisting of 28 ft. 5-in. spans, both with conc. pile bents substructure, S. A. 903-1.

Tex., Marshall—City Comsn., W. C. Albright, City Engr., received plans from Texas & Pacific Ry. Co., E. F. Mitchell, Ch. Engr., Dallas, for underpass, N. Grove St.; 2 conc. abutments.

Tex., Waco—State Highway Comsn., G. G. Wickline, Bridge Engr., Austin, soon begin soundings for bridge over Brazos River.

Tex., Waco—Missouri-Kansas-Texas R. R. Co. of Texas, F. Ringer, Ch. Engr., Dallas, and St. Louis-Southwestern Ry. Co. of Texas, W. S. Hanley, Ch. Engr., Tyler, will begin survey at early date preliminary to building viaduct or underpass over tracks of both lines, costing approx. \$350,000.

Va., Arlington—See Miscellaneous Construction.

### Contracts Awarded

Fla., Jacksonville—Duval County Comms. let contract to Frank B. Miller Electric Co., 487 Riverside Ave., at \$12,200, for new lighting system on St. Johns River bridge; L. E. Brown, County Electrician.

Md., Centerville—Queen Annes County Comms. let contract to Field, Barke & Underwood for bridge over north fork of Corscia River, Centerville Landing.

Va., Richmond—City, R. Keith Compton, Dir. of Public Works, let contract to Richmond Structural Steel Co., 17th and Dock St., Richmond, and Virginia Bridge & Iron Co., Roanoke, for steel for repairing Ninth St. bridge. 12-25

## Canning and Packing Plants

Tex., Houston—Rath Packing Co., Waterloo, Iowa, reported, plans erection of building for distribution; site not selected.

## Clayworking Plants

Ala., Birmingham—Dixie Fire Brick Co., H. S. Teal, 1531 N. 31st St., reported, plans erection of additional kiln, capacity 60,000 brick; clay from coal mines adjacent to plant and from Kentuck and Anniston, are being used in manufacture of fire brick; also plans installation of additional machinery. 9-11

Ala., Huntsville—City expend \$20,000 in 1931 for drainage project.

Ga., Macon—Merger of five brick companies in southeast into the Southern Brick and Tile Co., 460 Broadway, Macon, with investments approx. \$4,000,000; companies include Bibb Brick Co., 10th and Oak Sts., Macon; Cherokee Brick Co., Waterville Road, Macon; Standard Brick & Tile Co., 460 Broadway, Macon; Columbus Brick & Tile Co., Florida Natl. Bank Bldg., Jacksonville, Fla.; Georgia-Carolina Brick & Tile Co., 748 Reynolds St., Augusta; plants will be located at Macon, Augusta, Columbus, Bainbridge, Ga.; Dixon and Callahan, Fla.; Society Hill, S. C.; Daisy, Tenn.; W. E. Dunwoody, Rivoli, Macon, is president of new company. 12-4

S. C., Langley—South Carolina Clay Co., incorporated; H. W. Smith, H. S. Hensley.

Tex., San Antonio—Southwestern Ceramic Products Co., Independence, Mo., reported, soon begin erection of brick and tile plant. 9-25

W. Va., Fairmont—Tygart Valley Brick and Tile Co., organized; Milton Williams, Skinner Bldg.; has plant formerly operated by Colfax Brick Co.

## Coal Mines and Coke Ovens

Ky., Middlesboro—Gunn Coal Mining Co., capital \$30,000, incorporated; W. E. Gunn, L. J. Nicholson.

Mo., Huntsville—Alex Shaw, Huntsville, representing capitalists, reported, plans development of 2000 acres coal land near here; spur track will connect field with main line of Wabash Railway.

W. Va., Winifrede—Winifrede Collieries, capital \$100,000, incorporated; D. H. Morton, George S. Couch, both Charleston.

## Cotton Compresses and Gins

Tex., Inez—Bowers Gin Co., capital \$17,000, incorporated; A. B. Bowers, R. E. Kern.

## Cottonseed-Oil Mills

Tex., Edinburg—Owner, care of B. Hudgins, Sec., Chamber of Commerce, reported, having surveys made for cotton seed oil mill, 50,000 tons annual capacity; cost \$75,000.

## Drainage, Dredging and Irrigation

Alabama—U. S. Engr. Office, Montgomery, opens bids Jan. 19 for dredging channel to Choctawatchee Bay toward East Pass.

Ala., Mobile—U. S. Engr. Office opens bids Jan. 26 for dredging in Channel connecting Mobile Bay and Mississippi Sound, point approx. 4000 ft. east of Beacon 4 and on

prolongation of present channel marked by Beacons 4, 6 and 8 to point approx. 3000 ft. west of Beacon 8, approx. 4.7 mi., Sec. 1; in Mobile Bay to New Orleans Intracoastal Waterway Channel, from 9-ft. contour in Grand Island Pass near Pearl River Beacon to 9-ft. contour near mouth of Rigolets, approx. 3 mi.

Ala., Mobile—U. S. Engr. Office opens bids nel, point 1200 ft. north of south end of Jan. 29 for dredging in Mobile River Channel-Tangent 3, which is approx. opposite foot of St. Francis St., to mouth of Mobile River, approx. 10,000 ft.

Ala., Mobile—U. S. Engr. Office has low bid from National Dredging Co., 233 Broadway, New York, at 5.47 cents per cu. yd. for 3,000,000 cu. yd., Mobile Bay Channel. 12-11

Fla., Charlotte Harbor—U. S. Engr. Office, Jacksonville, opens bids Jan. 29 for dredging approx. 31,000 cu. yd., place measurement, in channel of approach to municipal pier and turning basin, Punta Gorda, Charlotte Harbor.

Fla., Miami—U. S. Engr. Office, Jacksonville, opens bids Jan. 26 for dredging approx. 137,000 cu. yd. materials other than rock and 274,000 cu. yd. rock, turning basin of Miami Harbor.

Fla., Miami Beach—See Miscellaneous Construction.

Fla., Tampa—U. S. Engr. Office, Jacksonville, opens bids Jan. 22 for dredging approx. 502,000 cu. yd. other than rock and 75,000 cu. yd. rock, Sparkman Channel, Tampa Harbor.

Fla., St. Petersburg—U. S. Engr. Office, Jacksonville, opens bids Jan. 15 for dredging approx. 325,000 cu. yd. soft material in channel of approach to Port of St. Petersburg and in port basin.

La., Hammond—Comms. of Tangipahoa Drainage Dist. No. 1 of Tangipahoa Parish, J. M. Blache, Pres., let contract to Coastal Construction Co., Gulfport, Miss., at approx. \$43,000 for gravity drainage system; E. G. Frailler, Engr. 11-26

Mississippi—State Highway Comsn., Jackson, opens bids Jan. 20 for cutting canal along north side of Biloxi-Ocean Springs bridge between bents 114 and 147, 2250 cu. yd. excavation.

South Carolina—U. S. Engr. Office, Charleston, opens bids Jan. 14 for dredging approx. 16,588 cu. yd., Waccamaw River.

S. C., Charleston—Standard Oil Co. applied to U. S. Engr. Office for permission to dredge approx. 30,000 cu. yd. material from Town Creek in front of dock.

S. C., Charleston—U. S. Engr. Office opens bids Jan. 14 for dredging approx. 88,000 cu. yd., Shipyard River, Charleston Harbor, S. C.

Texas—U. S. Engr. Office, Galveston, opens bids Jan. 20 for dredging channel, Aransas Pass to Corpus Christi.

Tex., Corpus Christi—U. S. Engr. Office, Galveston, start deepening Corpus Christi ship channel to 30 ft. in few weeks.

Va., Norfolk—City Council making investigation preliminary to dredging Scotts Creek to foot of Elm Ave. and creating small-boat harbor; \$12,000.

## Electric Light and Power

Electric light and power work in connection with many LAND DEVELOPMENT operations involves the expenditure of large sums of money. See that classification for details.

Ala., Birmingham—Alabama Power Co., Brown-Marx Bldg., reported, expend \$5,000-000 during 1931 for expansion and improvements.

Ala., Huntsville—Alabama Power Co., Brown-Marx Bldg., reported, plans expending \$125,000 for improvements.

Ga., Savannah—Savannah Electric & Power Co., reported, plans installing overhead electric transmission and distribution system along Staley Blvd.

La., Alexandria—City, Mayor Lamkin, reported, plans constructing power line across Red River opposite forts above city, carry line to U. S. Veterans' Hospital at Camp Stafford; line to be the first of 3 projects to cost \$20,000.

Virginia—Appalachian Electric Power Co., 129 Campbell Ave., E., Roanoke, reported, expend \$1,000,000 in 1931 for completion of Reusens hydro electric project on James River, will raise dam about 10 ft.; install 5 generators and water wheels totaling about 17,000 h.p.; triple capacity.

Mo., Springfield—Empire District Electric Co., Joplin, reported, acquired light and power holdings of Ozark Utilities Co. serving number of towns northwest of Springfield, including Bolivar, Buffalo, Humansville, Greenfield, Lockwood, Golden City, etc.

North Carolina—E. C. Deal, Pres., Peoples Light & Power Corp., 57 William St., New York, reported, interested in development of hydro electric project on Dan River in Stokes and Rockingham Counties; cost about \$8,000,000; preliminary work under way.

Okl., Erick—City plans \$50,000 light and power system; may vote on bonds.

Tenn., Memphis—Riggs-O-Not Co., 206 S. Cooper St., incorporated; Wm. A. McNeill, S. M. Neely.

Tex., El Paso—El Paso Electric Co., reported, expend \$260,000 in plant improvements.

Va., Richmond—Virginia Electric & Power Co., reported, plans expending \$2,000,000 in 1931 in Richmond and outlying districts to include completion of transmission line between Petersburg and properties in North Carolina, construction of short lines, etc.

Standard Gas & Electric Co., 231 S. La Salle St., Chicago, Ill., parent organization of Louisville Gas & Electric Co., Louisville, Ky., Oklahoma Gas & Electric Co., Oklahoma City, and other companies plan expending \$43,500,000 in 1931 for improvements to subsidiary and affiliated companies.

## Fertilizer Plants

N. C., Wilmington—Crescent Guano Co., incorporated; David H. Scott, 516 S. Third St.; company is affiliated with East Coast Fertilizer Co.

## Flour, Feed and Meal Mills

Va., Axton—Axton Roller Mills, J. S. Mitchell, Proprietor, will rebuild burned flour, feed and meal mill, daily capacity 75 bbls.; 30x50x40 ft., frame, wood floor, tin roof; will let contract Feb. 20; cost of buildings \$5000; of machinery \$15,000; will install flour and meal machinery. See Want Section—Machinery and Supplies.

## Foundry and Machine Plant

Mo., Kansas City—Acme Furnace & Sheet Metal Co., 407 Southwest Blvd., reported, let contract to D. M. Wall, 2617 Agnes St., for 1 story addition; 50x100 ft.; cost \$25,000; H. D. Pampel, Archt., Finance Bldg.

Mo., St. Louis—Alco Valve Co., Inc., 2628 Big Bend Blvd., plans expansion of manufacturing facilities including installation of additional machine tools.

Tenn., Chattanooga—Crane Co., 836 S. Michigan Ave., Chicago, Ill., reported, plans establishment of radiator plant in the South; location at Chattanooga under consideration.

## Garages and Filling Stations

Fla., Miami—Orange State Oil Co., N. H. 65th Terrace, reported, let contract to Deigaard Builders, Inc., 2975 S. W. Eighth St., for service station Biscayne Blvd. at 11th St. 10-2

Fla., Tampa—Gulf Coast Motor Line, Inc., chartered; E. M. Bassett, 5606 Tallaferro St.

Fla., Tampa—Warren Leach, Inc., chartered; J. W. Leach, 2525 Watrous Ave.

Fla., Tampa—H. E. Frost, Inc., chartered; D. N. Brown, 1009 Orange St.

Fla., West Palm Beach—Palm Beach Motors, Inc., chartered; N. Fletcher, 1509 1/2 Florida Ave.

Ga., Atlanta—Specification Motor Oil System, D. P. Chambers, Pres., 2213 Starrett Bldg., Memphis, Tenn., reported, let contract to P. R. Craig, 606 N. Twenty-fourth St., Birmingham, Ala., for 2 filling stations on Courtland and Peachtree Sts.; brick and stucco.

Ky., Ashland—M. E. S. Posey, 18th St. and Carter Ave., will begin erection about Feb. 1 of filling station; 1 story; asbestos roof; will install air compressor and tank, air racks, etc. See Want Section—Machinery and Supplies. 12-11

Ky., Henderson—Brad Smith & Co., incorporated; S. S. Storm, B. B. Smith.

Md., Baltimore—John Watson, Jr., Munsey Bldg., reported, construct service station 501 Radnor Ave.; brick, stucco; 1 story; asphalt and metal tile roof; conc. floor and driveway; cost \$17,000.

Md., Baltimore—Great Eastern Holding Co., 239 President St., will call for bids about Feb. 15 for filling station, 2330 Frederick Rd.; 1 story; brick.

Md., Baltimore—Frank, Winer, National Store Co., 106 McPhail St., plans taking bids

about Feb. 15 for gas service station 948 Warner St.; 1 story; brick.

Mo., Kansas City—Standard Oil Co., 5301 E. Ninth St., reported, plans erecting filling station, N. W. cor. Forty-seventh and Summit Sts.

Mo., Kansas City—Nafziger Baking Co., Admiral and Virginia Sts., reported, plans erecting 1-story garage, N. E. cor. Eighth St. and Virginia Ave.

Mo., Kansas City—Brookside Garage, Inc., chartered; George W. Arnold, 1124 Locust St.

Mo., St. Joseph—St. Joseph Railway, Light, Heat & Power Co., reported, has plans by Walter Boschen, Tootle-Lacy Bldg., for 2 story and basement addition to equipment, storage, service and distributing plant; cost \$60,000.

N. C., Mail, Willow Springs, Cairo—K. B. Johnson & Sons, Inc., capital \$50,000, chartered; K. B. Johnson, Cairo; B. B. Johnson, Fuquay Springs.

N. C., High Point—Gate City Motor Co., capital \$100,000, incorporated; C. W. Edwards.

Tenn., Memphis—Robert C. Crouch, 63 S. Third St., reported, has contract for filling station, Cox and Central Aves.; brick veneer, 1 story, 24x26 ft. 12-18

Tenn., Memphis—J. B. Martin, 1083 Florida Ave., reported, let contract to W. C. Cannon, 788 Mississippi Ave., for filling station, S. W. cor. Parkway and Horn Lake Rd.; Standard Oil Co., Lessee, 1211 Union St. 12-18

Tex., Dallas—Duggan Bishop Co., Inc., capital \$35,000, incorporated; King H. Duggan, 602 N. Rosemont St.

Tex., San Antonio—Wm. L. Flagg, Tampico, Mexico, reported, construct filling station, Olmos Drive and McCullough Ct., for Magnolia Petroleum Co., 227 Broadway; 1 story, brick and rein. conc.

Tex., San Antonio—B. F. Dittmar Co., City Natl. Bank Bldg., reported, construct filling station, Fredericksburg Rd. and West Lynwood; 1 story, brick and rein. conc.; Ernest F. Kusener, Contr., 735 Riggsby Ave.

Va., North Tazewell—Harman-Garst Motor Co., capital \$25,000, incorporated; Martin L. Harman.

W. Va., Salem—Herschel D. Wade, Inc., capital \$25,000, chartered; D. A. Porter, G. L. Keener.

## Gas and Oil Enterprises

Ga., Atlanta—Atlanta Gas Light Co., R. C. Hoffman, V. P., applied to Georgia Public Service Comsn. for permission to issue \$4,000,000 notes; \$2,000,000 to bear 4 1/2% and \$2,000,000 to bear 5% interest, proceeds to be used for payment of capital expenditures and to provide for payment of other items of like character.

Miss., Hattiesburg—City votes Jan. 20 on granting gas franchise; Herbert Gillis, M. L. Waggoner, and N. E. Harman, Trustees for Franchise. 11-27

Mo., Smithville—Smithville Gas & Service Co., incorporated; W. A. Bottorff, Nelson H. Poe.

S. C., Charleston—See Drainage, Dredging and Irrigation.

Tex., Ore City—Southern Crude Oil Purchasing Co., 122 E. 42nd St., New York, has option on 20,000 acres in vicinity of Ore City; develop for gas and oil.

Tex., San Antonio—San Antonio Public Service Co., E. H. Kifer, V. P.-Gen. Mgr., reported, plans expending \$900,000 for gas mains and pole line extensions and changes in substation equipment.

Va., Fairfax—Standard Oil Co., H. Phipps, Mgr., 241 Pa. Ave., N. W., Washington, D. C., reported, plans service station Fairfax Court House; 1-story, brick; cost \$10,000.

Va., Lynchburg—Central Public Service Corp., 105 W. Adams St., Chicago, Ill., re-improvements, installation of additional boiler, plans expending \$100,000 for plant ers, compressors and storage tanks; also plans extension of gas service across James River to Madison Heights, etc.

United Gas Improvement Co., 1401 Arch St., Philadelphia, Pa., controlling Nashville Gas & Heating Co., Nashville, Tenn., reported, expend \$31,000,000 during 1931 for construction program.

## Ice and Cold-Storage Plants

Md., Baltimore—Sanitary Ice Co. has plans by George Wessel, 601 W. 40th St., for 1 story brick ice plant and loading platform, Aisquith near 25th St.

Miss., Greenville—Greenville Ice and Coal Co., reported, expend \$45,000 for remodeling Greenville plant and \$7500 for remodeling Rosedale plant operated under Rosedale Ice Co.



Miss., Hazlehurst—Morris Ice Co., Jackson, reported, receives bids soon for 1-story, 20x60 ft. ice plant; C. H. Lindsley, Tower Bldg., Jackson. 12-18

### Iron and Steel Plants

Ala., Gadsden—Gulf States Steel Co., Brown-Marx Bldg., Birmingham, reported, expend \$9,000,000 for extension work in 1931. 10-16

Tex., Houston—A. Dewar, P. O. Box 1598, contemplates building rolling mill to manufacture cotton ties, railroad spikes, bolts, reinforcing iron rods or rods from scrap steel.

W. Va., Wheeling—Wheeling Steel Corp., reported, let contract to Wheeling Structural Steel Co., 428th St., for 500 tons fab. struc. steel for rolling mill.

### Land Development

Ark., Jasper—Bert H. McCarty, reported, plans development of resort, 200 acres; construct 2½ mile lake, etc.

Fla., Lakeland—W. M. Bell, First National Bank Bldg., Memphis, Tenn., reported, acquired 76 acre citrus grove.

Fla., Miami—Reirrac Properties, Inc., chartered; O. M. Carrier, 1630 N. W. 38th St.

Fla., Miami Beach—See Miscellaneous Construction.

Fla., Mount Dora—Granada Courts, Inc., chartered; E. E. Truskett, J. B. Griswold.

Fla., Orlando—Avalon Orange Groves Co., incorporated; A. E. Davenport, R. W. Nichols.

Fla., Pensacola—Okaloosa Amusement Co., E. H. Robinson, reported, plans development of island opposite Camp Walton.

Fla., St. Petersburg—McCutcheon-Upham Miller, Inc., chartered; R. J. McCutcheon, Jr., 417 76th St., S.

Fla., St. Petersburg—Pasadena Holding Co., incorporated; R. B. Lassing, 805 16th Ave., N. E.

Fla., West Palm Beach—W. L. Strozler & Sons Co., incorporated; W. L. Strozler, 916 12th St.

Ky., Ashland—Nickell & Gevedon Realty Corp., capital \$20,000, incorporated; D. T. Nickell, Hans Watts.

Ky., Paducah—City National Co., capital \$100,000, incorporated; James C. Utterback, Buckner Lane.

Md., Baltimore—North American Realty Co., 1105 E. Baltimore St., chartered; Reuben Caplan, Saul Silberman.

Md., Baltimore—Johns Realty Co., Hanover and Fayette Sts., chartered; J. Harry West, Harry E. Karr.

Md., Baltimore—August A. Gassinger & Sons, Inc., 1766 N. Gay St., incorporated; August F. Gassinger, Henry J. Gassinger.

Md., Hyattsville—Barnaby Cemetery Corp., incorporated; Sherman H. Hollingsworth, Rich. C. Zantlinger.

Mo., Greenville—Wayne Development Co., incorporated; Edward Beisbarth, 2832 A Cherokee St., St. Louis.

Mo., Maryville—Martin Farms, Inc., incorporated; Charles V. Martin, S. Forest Martin.

Mo., St. Louis—St. Louis Motor Parks, Inc., incorporated; D. A. Boyd, 4806 Washington St.

N. C., Burlington—Fonville Realty Co., incorporated; D. R. Fonville.

N. C., Candor—Bell Orchard, Inc., capital \$100,000, chartered; A. Leon Capel, E. E. Clark.

Okla., Bartlesville—Guy Swain, develop 640 acres for lake and cabin sites; will construct lake, bathing beach, log cabins, etc. 1-1

Okla., Sulphur—City voted \$35,000 park bonds.

Tenn., Chattanooga—Chattanooga Realty Holding Co., incorporated; Eugene Merriam, Prov. Bldg.

Tex., Houston—Main Realty Co., incorporated; John H. Crooker, State Natl. Bank Bldg.

Va., Norfolk—Leib Realty Corp., capital \$15,000, incorporated; S. G. L. Hitch, Dickson Bldg.

Va., Richmond—Chesterfield Golf Club, Inc., capital \$25,000, incorporated; L. R. Brown, 1519 Hull St.

### Lumber Enterprises

Mo., Bolivar—Faulkner Lumber Co., capital \$20,000, incorporated; N. C. Faulkner, Tuskahoma, Okla.; R. C. Squire, Bolivar.

Tenn., Memphis—Ford Hardwood Lumber Co., Florida Ave., reported, plans rebuilding burned mill building at Kansas and Ingle Sts.; galv. iron, 2 story; cost \$50,000. 12-11

### Metal-Working Plants

Tex., Houston—Joseph Finger, Archt., Democratic Bldg., preparing plans for fire-proof, steel and conc. plant for Southwestern Can Co., Greenwood and Esperson Sts., on Houston Belt and Terminal. 5-11

### Mining

Texas—Uel Stephens, Moore Bldg., San Antonio, and associates, reported, acquired and will develop 1100 acres potash deposits in Lynn County, vicinity of Tahoka.

Tex., Ore City—J. R. Flannery, Flannery Bldg., Pittsburgh, Pa., reported, representing eastern capitalists, plans development of iron ore and oil fields on 250,000 acres in Upshur, Morris, Marion and Harrison counties; J. T. Pierson, Ore City, also interested.

### Miscellaneous Construction

Ark., Fort Smith—City Council voted to appropriate \$25,000 for revetment on Arkansas River. Braden Bend.

Fla., Jacksonville—U. S. Engr. Office, Florida Theater Bldg., plans calling for bids within few days for 8 mi. training wall-revetment repairs, St. Johns River, extending over approx. 15 mi., 68,000 tons rock.

Fla., Miami Beach—Virginia Key Development Co., F. H. Rand, Pres., Huntington Bldg., Miami, reported, has low bid from Moody, Anderson & Milling, National Bank Bldg., Hollywood, Fla., for dredging, sea walls, etc., Virginia Key; W. E. Brown Engineering Co., Engr., Bastian Bldg., Miami Beach. 12-11

La., New Orleans—Bd. of Commrs. of Port of New Orleans, New Orleans Court Bldg., opens bids Jan. 13 for furnishing and erecting 530 tons struc. steel framing for shed at Mandeville St. wharf. 11-27

La., New Orleans—U. S. Engr. Office, foot of Prytanla St., has low bids for levees: Bonnet Carre Spillway Side Levees, 48,000 cu. yd. earthwork, Boone & Wester, Sellers, at 41 cents per cu. yd.; Normans Landing, 40,000 cu. yd., Acme Construction Co., Pointe a la Hache, 18 cents per cu. yd.; Barbin Landing, 36,000 cu. yd., Acme Construction Co., 24 cents per cu. yd. 12-18

Md., Chesapeake City—U. S. Engr. Office, Wilmington, Del., opens bids Jan. 30 for constructing approx. 130 lin. ft. bulkhead, Chesapeake and Delaware Canal.

Mo., Jefferson City—U. S. Engr. Office, Postal Telegraph Bldg., Kansas City, opens bids Jan. 15 for about 8970 lin. ft. standard pile clump dikes, Missouri River, Murrays Bend, about 3.5 mi. from here.

Mo., St. Louis—U. S. Engr. Office, Customhouse, let contract to Bilhorn, Bowers, & Peters, Inc., Rwy. Exch. Bldg., at \$98,575, for 6000 lin. ft. bank revetment, Bonhomme Bend, Missouri River. 12-11

Mo., St. Louis—City, Bd. of Public Service, E. R. Kinsey, Pres., has plans in progress for \$25,000 brick and conc. crematory, including chapel and repository; F. A. Updegraff, Archt., Municipal Courts Bldg., 14th and Market St. 12-11

Missouri—U. S. Engr. Office, McCall Bldg., Memphis, Tenn., opens bids Jan. 13 for 860,000 cu. yd. earthwork, Lower St. Francis Levee Dist., designated as follows by item number, location, distance from Cairo R. D. (below), kind of work, estimated cu. yd., net height: 22D, Stewart, Mo., 90R, enlargement, 215,000, 12 to 23 ft.; 22E, Stewart, Mo., 91R, enlargement, 115,000, 16 to 19 ft.; 22G, 22H, 22I, 22J, 22K, all Stewart, Mo., all 92R, all new, 110,000, 110,000, 110,000, 100,000, 100,000, 19 to 20, 20 to 21, 18 to 22, 16 to 19 and 17 to 19 ft.

N. C., Kitty Hawk—Constructing Quartermaster, Munitions Bldg., Washington, let contract to Wills & Mafra Corp., 303 W. 42nd St., New York, for Wright memorial, Kill Devil Hill. 12-25

Oklahoma—Revetment—See Roads, Streets and Paving.

Tenn., Nashville—Tennessee State Park and Forestry Comsn. adopted plans of State Dept. of Highways, T. C. McEwen, Ch. Engr., for new Reelfoot Lake spillway, with bridges and approaches, costing \$110,000.

Tex., San Antonio—City, C. M. Chambers, Mayor, plans improvements at Woodlawn Lake, including dredging, deepening and cleaning lake, constructing bathing beach, wider driveway around lake, recreational facilities, etc.; \$118,000; R. H. Hugman, Archt., Moore Bldg.

Va., Arlington—Constructing Quartermaster, Munitions Bldg., Washington, D. C., let contract to Hegeman-Harris Co., 360 Madison Ave., New York, for approaches to Tomb of Unknown Soldier, Arlington Cemetery. 12-25

Va., Arlington—Arlington Memorial Bridge Comsn. has low bid from North Carolina Granite Co., Mount Airy, N. C., at \$61,500, for furnishing and setting granite pedestals on bridge plaza.

Va., Langley Field, Hampton—Constructing Quartermaster, Fort Monroe, has low bid from Newport News Engineering and Contracting Co., Lee Hall, for sea wall, at \$161,323 for conc., \$183,340 for tile, and \$215,400 for tile set in conc. 12-11

W. Va., Charleston—U. S. Engr. Office, Coal Exch. Bldg., Huntington, will call for bids in few days for lock and appurtenances, Great Kanawha River, consisting of one only of twin locks to be constructed opposite Marmet, 8 mi. from here; available dimensions of lock chamber will be 56x360 ft., with 24-ft. lift; includes lock and guard walls, filling and emptying valves, lock gates, gate and valve operating machinery, piping, fittings and accessories; will call for bids for lock at London, W. Va., Great Kanawha River, within few days.

### Miscellaneous Enterprises

Ala., Birmingham—Chevrolet Motor Co., 3044 Grand Blvd., Detroit, Mich., reported, leased building on Nineteenth St. near Ninth Ave., N., for distributing plant for truck bodies.

Ala., Tuscaloosa—Gulf States Paper Corp., W. E. Penfield, V. P., in charge of production, advises are transferring Braithwaite, La., pulp and paper mill and New Orleans, La., bag factory to Tuscaloosa; no additional buildings required as Tuscaloosa mill was originally planned and laid out to take care of future addition of the two plants; are handling work by company's organization and to a great extent are duplicating the equipment already installed at Tuscaloosa plant. 12-18

D. C., Washington—Carry Ice Cream Co., plans addition S. W. Cor. 14th and D. Sts., S. E.; brick, steel and conc.; F. L. Wagner, 10 L St., S. E. will figure revised plans.

Fla., Jacksonville—Atlantic Mfg. Co., incorporated; R. G. Williamston, 3019 St. Johns Ave.; manufacture novelties.

Fla., Jacksonville—G. & V. Co., incorporated; F. B. Noble, Barnett Bldg.; operate laundry.

Fla., Jacksonville—Jacksonville Bottle Supply Co., capital \$50,000, incorporated; S. Datz, 731 Acosta St.; manufacture bottles.

Fla., Jacksonville—Try-Me Bottling Co. incorporated; J. Pearson, 1275 Ortega Blvd.

Fla., Jacksonville—Good Hope Water Co., capital \$150,000, incorporated; L. G. Armstrong, Lem Turner Road.

Fla., Key West—Florida East Coast Ry. Co., St. Augustine, reported, applied to Interstate Commerce Comsn., Washington, D. C., for permission to extend present car ferry service, now operating between Key West and Havana, Cuba, to include New Orleans, La.

Fla., St. Petersburg—Dann-Gerow Paint Co., Inc., chartered; H. A. Dann, 800 Seventh Ave., S.

Ga., Savannah—Savannah Morning News, reported, acquired Savannah Press.

Ky., Louisville—Utilities Appliance Co., Breslin Bldg., increased capital \$20,000 to \$50,000.

Ky., Louisville—Linker Brothers Baking Co., capital \$45,000, incorporated; Ben Linker, 1372 S. Brook St.

Ky., Sturgis—Leroy C. Bernard acquired Sturgis News, from J. A. Anderson.

Md., Baltimore—Security Construction Co., Inc., 1316 Munsey Bldg., chartered; Moses Cohen, Paul Schmidt.

Md., Baltimore—Baltimore Body Corp., 2844 W. Garrison Ave., incorporated; John C. A. Lassahn, Harvey W. Frey.

Md., Middletown—Shank Co., Inc., chartered; Harry M. Gross, Earl M. Kepler; operate creamery.

Miss., Fayette—August Linder, Cobly, Wis., reported, considering establishment of cheese plant.

Mo., Kansas City—J. F. Pritchard & Co., incorporated; J. F. Pritchard, Dwight Bldg.; builders and contractors.

Mo., Springfield—Springfield Tablet Mfg. Co., 300 N. Jefferson St., reported, let contract to M. E. Gillioz, Monett, for 2-story, 60x76-ft. addition to tablet manufacturing plant, Mill and Jefferson Sts.

Mo., St. Louis—R. C. Nicotto Constr. Co., incorporated; Rosari C. Nicotto, 2516 Arlington St.

Mo., St. Louis—Orchard Paper Co., Twelfth Blvd. and Chouteau St., reported, leased 2 story and basement building S. E. Cor. Seventeenth and Austin Sts., for warehouse and manufacturing plant.

Mo., St. Louis—Thermos Electric Co., leased building 4327 Duncan Ave., for manufacture electrical equipment and radio apparatus.



Mo., St. Louis—Clark-Dunn Mfg. Co., 1954 Goodfellow Ave., capital \$125,000, incorporated; Wm. A. Clark, 925 Beach Ave.; manufacture shoe polish and creams.

Mo., St. Louis—F. X. Speh & Sons Monument Co., 6845 Gravois Ave., reported, let contract to Henry Beetz, 2608 Nebraska Ave., for shop and office building, Gravois and Vermont; 1 story, brick; shop 24x80 ft. and office 22x28 ft.

Mo., St. Louis—Remley Co., 1315 Hodlamont Ave., reported, have plans ready in Jan. for market and packing plant, Kienlen and St. Louis Aves.; plans include remodeling present building into packing plant and warehouse and constructing new market building; will probably call for bids in February. 12-18

Mo., St. Louis—Druggists Addressing Co., Inc., chartered; H. W. Eddy, 1307 Washington St.

N. C., Asheville—Asheville Paving Co., capital \$1000,000, incorporated; J. K. Cowan, 87 N. Liberty St.

N. C., Charlotte—Thrower Marble & Tile Co., capital \$50,000, incorporated; H. T. Thrower, 402 Louise Ave.

N. C., Greensboro—Greensboro Builders Supply Co., capital \$50,000, incorporated; J. L. Crouse, American Bank Bldg.

N. C., High Point—Automatic Electric Co., reported, will manufacture robot telephone answering invention of T. A. and Robbins Tilden.

N. C., Marion—F. J. Bates, 21 Broad St., Asheville, and C. P. Butcher, Gadsden, Ala., reported, plans establishing plant for manufacture of sanitary appliances.

N. C., Mount Holly—Home Steam Laundry, Inc., capital \$50,000, incorporated; J. Van Duncan, O. A. Todd.

Tenn., Friendsville—American Monument Co., capital \$50,000, incorporated; H. G. Tener, F. L. Love.

Tenn., Greenfield—Coats & McAdams Box Factory, reported, plans rebuilding burned plant; cost \$50,000.

Tenn., Memphis—Tennessee Lumber & Building Material Co., Inc., capital \$25,000, incorporated; P. Levine, 910 Hawthorne St.

Tex., Houston—Southern Lithographing Co., incorporated; John F. Sullivan, 1102 Holman St.

Tex., Dallas—Gulf States Life Insurance Co., Marvin Bldg., increased capital, \$200,000 to \$280,000.

Va., Marion—W. F. Culbert & Sons, reported, let contract to Coatsville Boiler Works, Packard Bldg., Philadelphia, Pa., for 4 unit steel plant for manufacture pre-mixed paving materials; will have producing capacity of 6000 yds. paving material daily; considering enlargement of crushing plant.

Va., Norfolk—Baker-MacNeil Machinery Corp., capital \$20,000, incorporated; E. L. McNeil, 2821 Vincent Ave.

### Motor Bus Lines and Terminals

Ala., Montgomery—Capital Motor Lines, recently incorporated with \$60,000 capital stock, by A. A. Crow and associates; will operate bus lines between Montgomery and Mobile and Mobile and Montgomery and Meridian, Miss.; installing shop, storage quarters and officers quarters at 311 Bibb St.

Fla., Jacksonville—State Express, Inc., chartered; J. Wellbrock, 548 E. Union St.

Fla., Orlando—A. B. C. Transfer Co., Inc., chartered; C. S. Pore, 803 E. Amelia St.

Mo., St. Louis—Truck Terminal Co., 1219 Spruce St., will occupy building N. W. corner Broadway and Cerre Sts.; Frank J. Wiget, Owner.

Tex., Cameron—State Railroad Comsn., Austin, reported, granted permission to Bee Line Coaches to operate bus line between Cameron and Brenhan, via Caldwell.

### Railways

Md., Baltimore—Baltimore & Ohio R. R., Daniel Willard, Pres., expend approx. \$35,000,000 for improvements in 1931, including approx. \$4,000,000 for new equipment.

Okla., Tulsa—Atchison, Topeka & Santa Fe Ry., C. T. Ripley, Ch. Mech. Engr., Topeka, Kans., plans installing automatic signals, Chanute, Fans, to Tulsa.

Tenn., Nashville—Louisville & Nashville R. R. Co., H. T. Shanks, Pur. Agt., ordered

50,750 tons steel rail and approx. 10,000 tons rail fastenings from Tennessee Coal, Iron & Railroad Co., Birmingham, reported, involving approx. \$2,500,000.

Va., Roanoke—Norfolk & Western Ry. Co., A. C. Needles, Pres., expend approx. \$10,000,000 for additions, improvements and new equipment.

### Railway Shops and Terminals

Miss., McComb—See Memphis, Tenn.

Tenn., Memphis—Illinois Central R. R. Co., A. F. Blaess, Ch. Engr., Chicago, Ill., will build box, flat and house cars here and refrigerator cars at McComb, Miss.; now moving machinery here.

### Roads, Streets and Paving

In connection with LAND DEVELOPMENT large sums are expended for roads, streets, paving and sidewalks. Details will be found under that classification.

#### Proposed Construction

ALABAMA—State Highway Comsn., Woolsey Fennell, Highway Director, Montgomery, opens bids Jan. 15 for 3 roads (plain cement conc. or bituminous surface courses on Portland cement conc. base) in following counties: Escambia—17.15 mi., Perdido Station to Sardis Church, 180,000 sq. yd. paving, F. A. 226;

Macon—2.20 mi., Tuskegee to Montgomery, 23,000 sq. yd. paving, F. A. 201-A;

Butler—0.34 mi., Greenville to Ft. Deposit, F. A. 101.

Ala., Birmingham—City, A. J. Hawkins, City Engr., opens bids Jan. 20 for grading, curbing, conc. paving; Improvement Ord. 1359 D, 20,000 cu. yd. excavation, 1300 lb. steel, 11,800 sq. yd. sheet asphalt or Warrentite bitulithic paving, 11,150 lin. ft. integral headers; Ord. 1370-D, 5000 cu. yd. excavation, 6940 sq. yd. conc. paving, 3650 lin. ft. conc. curb; Ord. 1371-D, 12,000 cu. yd. excavation, 1500 cu. yd. ditch excavation, 50 cu. yd. rip rap masonry, 450 cu. yd. rubble masonry, 3000 lb. steel, 24,900 sq. yd. conc. paving, 10,925 lin. ft. conc. curb; Ord. 1372-D, 22,000 cu. yd. excavation, 3900 lb. steel, 11,600 sq. yd. sheet or Warrentite bitulithic paving, 11,000 lin. ft. integral headers.

Ala., Gadsden—City plans expending \$78,000 for paving.

Alabama—State Highway Comsn., Woolsey Fennell, Director, Montgomery, let contract to National Cement Co., Brown-Marx Bldg., Birmingham, at \$2.26 per bbl. for 32,110 bbl. cement for hard surfacing 10 mi. highway between Bessemer City limits and Tuscaloosa County line.

Alabama—State Highway Comsn., Woolsey Fennell, Highway Director, Montgomery, 10,000 lin. ft. guardrail, 600 lin. ft. conc. ing. Troy and Brundidge, Pike County, F. A. 227, 31,000 lb. rein. steel, 95,000 cu. yd. excavation, 22,000 cu. yd. sand clay surfacing, 10,000 lin. ft. guardrail, 600 lin. ft. conc. bridges.

Ala., Prichard—City, T. M. Wilkins, City Clk., opens bids Jan. 20 for 12,900 cu. yd. common excavation, 28,900 lin. ft. curb and gutter, 12,700 sq. yd. conc. street paving, 16,500 sq. yd. conc. sidewalk, 4695 lin. ft. storm sewers and appurtenances, 7365 lin. ft. sanitary sewers and appurtenances.

Ark., El Dorado—City, Jacob R. Wilson, Mayor, considering grading, draining, curbing, guttering, brick, asphalt or conc. paving several streets.

Florida—State Road Dept., Robt. W. Bentley, Chmn., Tallahassee, opens bids Jan. 12 for 9 bridges and road in following counties:

Flagler-Volusia—9 conc. bridges, 6 of which are double conc. culverts and 3 conc. deck girders on precast conc. piling, total length on roadway of culverts 138 ft. and of bridges 432 ft., F. A. 60-B, Road 4;

Polk—5.22 mi. plain cement conc., asphaltic conc. or Macasphalt paving, black top surface to be on Florida limerock base, F. A. 73-C, Road 17.

Ga., Savannah—Chatham County Commrs. have low bid from John Monaghan at \$66,847 for limerock base course with 6-in. compacted depth, 19-ft. paving, Whitfield Ave. and Montgomery road. 12-11

La., Monroe—City, W. I. Neal, City Engr., plans paving 5 blocks, M St.

Maryland—State Roads Comsn., L. H. Steuart, Sec., Baltimore, has low bid from Christhill & Ensey, 1625 Ridgely St., Baltimore, at \$59,274, for 2.71 mi. conc., Generals' Highway, Gotts to Iglehart, Anne Arundel County, Cont. AA-105-72.

Md., Baltimore—City, Nathan L. Smith, Highway Engr., expend \$400,000 for paving to eliminate cobblestones, 7½ mi., 30 ft. wide, sheet asphalt or conc.; will open bids every Wednesday until work is covered.

Md., Baltimore—City, Nathan L. Smith, Highways Engr., has low bid from Frederico Bonadio, Old Town Bank Bldg., at \$20,345, for paving Cont. 567, Eastern Ave. underpass. 1-1

Md., Baltimore—State Roads Comsn., L. H. Steuart, Sec., improve several streets in city with \$610,000 from automobile tax, including repaving Russell St., widening to 54 ft., \$90,000; widening Washington Blvd., 10-ft. shoulder to be placed on either side, \$25,000; continuation of parking in center of Philadelphia road, \$75,000; widening Patapsco St. to 60 ft. and relocating tracks between Hanover St. and Pennington Ave.; parking space in center of Arlington Ave., \$40,000; continuation of Cold Spring Lane, \$40,000; widening Park Heights Ave. to 54 ft., \$120,000.

Md., Baltimore—City, Nathan L. Smith, Highways Engr., opens bids Jan. 14 for 7150 yd. sheet asphalt paving, Cont. 569, and for 37,000 cu. yd. grading, Cont. 570.

Missouri—State Highway Comsn., C. H. Cutler, Ch. Engr., Jefferson City, plans 165.8 mi. new roads, involving approx. \$3,550,000, in Southeast Missouri during 1931; includes 32.6 mi. conc., 133.2 mi. gravel roads; \$2,400,000 for new work, \$750,000 now under contract and \$400,000 will be appropriated for maintenance.

Okla., Oklahoma City—Oklahoma County, J. Floyd Frazier, County Engr., plans 2 mi. graveling.

SOUTH CAROLINA—State Highway Comsn., Ben M. Sawyer, Ch. Commr., Columbia, has low bids for 17 roads, paving unless otherwise designated, and 11 bridges, in following counties:

Hampton—14.340 mi., Route 24, Coastal Construction Co., Florence, \$235,746;

Marion-Dillon—10.272 mi., Routes 9 and 94, Atlantic Bitulithic Co., Munsey Bldg., Washington, D. C., \$156,993;

Darlington—14.824 mi., Route 30, Simons-Mayrant Co., Peoples Bldg., Charleston, \$283,052;

Greenville—19.998 mi., Route 284, Pennelly & Harley, Inc., Spartanburg, \$407,872; 4.05 mi., Route 25, Reed & Abbe, Inc., Fairview Road, Asheville, \$93,546;

Marion—9.455 mi., Route 57, Simons-Mayrant Co., \$154,086;

Dorchester—1.694 mi., Route 61, Summer-ville, MacDougald Construction Co., 545 Angler Springs Road, Atlanta, Ga., \$28,279;

Bamberg—10 mi., Route 78 and 6, Ballenger Paving Co., Emacee Bldg., Greenville, \$170,269;

Orangeburg-Lexington—21 mi., Route 3, H. E. Wolfe Construction Co., First Natl. Bank Bldg., St. Augustine, Fla., \$288,617;

Darlington-Lee—16 mi., Routes 30 and 34, Carolina Contracting Co., 1112½ Taylor St., Columbia, \$259,052;

Colleton—12 mi., Route 64, Pennell & Harley, Inc., Montgomery Bldg., Spartanburg, \$223,946;

Sumter—826 mi., U. S. Route 76, Southern Paving Construction Co., \$15,243;

Edgefield—15 mi., U. S. Route 25, William F. Bowe, Jr., 540 Reynolds St., Augusta, Ga., \$238,148;

Greenwood-Laurens—8 mi., Route 7, Pennell & Harley, Inc., \$121,301;

Dillon-Marlboro—18 mi., Route 9, Simons-Mayrant Co., \$250,695;

Orangeburg—125 mi., Routes 21 and 78, Louis des Cognets, 413 E. Main St., Lexington, Ky., \$208,687;

Marion-Horry—3 mi. grading, Route 38, MacDougald Construction Co., \$67,168;

Union—rein. conc. and struc. steel bridge over Tyger River, Route 92, D. M. Rickenbaker, Union, Cont. No. 1, \$34,557; Cont. No. 2, \$11,379; rein. conc. bridge and rein. conc. substructure over Fair Forest Creek and substructure over Tyger River, D. M. Rickenbaker, \$55,240;

Greenville-Anderson—rein. conc. bridge over Saluda River, Route 247, George A. Thomason, Greenwood, \$38,865;

Oconee—rein. conc. bridge over Coneross Creek, Route 183, Alley Construction Co., Bristol, \$20,974;

Laurens—rein. conc. substructure for bridge over Reedy River, Route 15, R. G. Kennedy, Batesburg, \$30,090; superstructure for same, D. M. Rickenbaker, \$11,382;

Charleston—rein. conc., struc. steel and

treated timber bridge over Awendaw River, Route 40, Florida Bridge & Construction Co., 49 Lorna Doone Blvd., Orlando, Fla., \$5411;

**Pickens**—bridge over Twelve Mile River and bridge over Cannon Creek, Route 183, C. Y. Thomason, Greenwood, \$10,674;

**Hampton**—rein. conc. bridge over Nigger Branch and rein. conc. bridge over Camp Branch, Route 28, C. T. Felix, Columbia, \$12,204;

**Abbeville**—rein. conc. bridge over Little River, Route 18, C. M. Lyle Construction Co., Gainesville, Ga., \$27,584. 12-18

**Tennessee**—State Dept. of Highways and Public Works, T. E. McEwen, Engr., Nashville, opens bids Jan. 30 for roads, involving \$750,000.

**Tex.**, Big Lake—Reagan County, H. L. Puckett, Clk., expend \$275,000 for 34 mi. paving, State Highway 99 and Federal Highway 67. See Financial News Columns. 12-18

**Tex.**, Brownwood—Brown County, E. M. Davis, Judge, plans 12.345 mi. grading, draining, Highway 7, 2.5 mi. east of here to Mills County line, F. A. 583-C, Unit 1, \$90,000.

**Tex.**, Fort Worth—Tarrant County Commrs. plan grading, draining, paving old Nine Mile road to Lake Worth via Azle Ave.

**Tex.**, Haskell—Haskell County, Joe A. Jones, Judge, plans 17.60 mi. rein. conc. paving, Highway 30, Haskell to Knox County line, F. A. 452-C, Unit 2, \$375,000; J. W. Puckett, Res. Engr., Stamford.

**Tex.**, Henderson—Rusk County, Sidney L. Ramsay, Judge, plans 6.612 mi. grading, draining, Highway 40, 5.5 mi. south of Jacksonville to Rusk, F. A. 566B, Unit 1; D. L. Hogan, Res. Engr., Box 695, Jacksonville.

**Tex.**, Henderson—Overton Road Dist. No. 1, Rusk County, expend \$25,000 for road work.

**Tex.**, Houston—City, J. M. Nagle, City Engr., has plans complete for 2 mi. paving Lyons Ave., costing approx. \$195,000, including about \$20,000 for surface drainage system.

**TEXAS**—State Highway Comsn., Gibb Gilchrist, Highway Engr., Austin, plans 2 roads in following counties:

**Williamson**—3.62 mi. grading, draining, Highway 2-B, southwest from Taylor, eliminating 2 railroad crossings;

**Travis**—2.14 mi. grading, draining, paving, Highway 20, Austin-Fredericksburg Road, at Oak Hill, on new alignment, \$68,400.

**Tex.**, Victoria—Victoria County, J. J. Woodhouse, Judge, plans 16.90 mi. grading, draining, Highway 128, Refugio County line to Victoria, S. A. 840-E, Unit 1; D. K. Shepard, Res. Engr.

**Tex.**, Waco—McLennan County Commrs. Court, R. B. Stanford, Judge, has low bid from J. T. Foty for paving Bewley Lane to Lake Waco and back along old Speegleville road, at \$51,536 for double squeegee, \$114,768 for 6-in. conc., \$80,248 for 2-in. cold rock asphalt on gravel base and \$91,504 for 2-in. hot rock asphalt. 12-18

**Tex.**, Waco—McLennan County, R. B. Stanford, Judge, plans 14.418 mi. grading, draining, Highway 67, Bosque County line to Speegleville road, F. A. 593-C, Unit 1, \$195,000.

**Tex.**, Waco—McLennan County Commrs., W. T. Lockwood, County Auditor, rejected bids for paving from city to lake; new bids due Feb. 10. 12-11

**Virginia**—State Dept. of Highways, C. S. Mullen, Ch. Engr., Richmond, plans asking bids at once, contracts to be let latter part of January, for road work.

**Va.**, Jamestown—Interior Dept., Washington, plans expending \$250,000, now available, for 19-mi. scenic highway in proposed Colonial National Monument area.

#### Contracts Awarded

**Ga.**, Lyons—City let contracts to Copeland-Wey, Inc., Red Rock Bldg., Atlanta, at about \$44,000, for conc. street, sidewalks and sewers; H. S. Joudan, Engr., Elberton.

**Maryland**—State Roads Comsn., L. H. Stewart, Sec., Baltimore, let contract to H. W. Kaylor, Wareham Bldg., Hagerstown, for F. A. P. 197B-Re, Cont. W-5863, Washington County, at \$145,841. 11-20

**Mo.**, Kansas City—City, Park Bd., let contract to H. Spitzkaufsky, 3229 Victor St., at \$105,781, for grading, 71st St. Blvd.

**Okla.**, Tulsa—City, George Watkins, City Engr., let contract to H. L. Cannady Co., 1116 S. Lewis St., at approx. \$14,000, for paving Fifth Ave.

**Tex.**, San Angelo—J. E. Ward Co., Inc., Linz Bldg., Dallas, has contract for 9.7 mi. hard surfacing, Highway 9, Sanatorium to Tom Green-Coke Counties line; Earl Beavers, Tom Green County Engr., to supervise work for state.

**West Virginia**—State Road Comsn., Geo. E. White, Sec., Charleston, let contract to Morris & Riggs, Sistersville, for 130,000 ft. guard rail along highways, Marshall and Wetzel Counties, at 29½ cents a foot.

**W. Va.**, Weirton—Hancock County let contract to J. R. Rice, Belmont, Ohio, at \$83,000, for brick on conc. paving, 2.66 mi., Butler Dist. road, 18 ft.

### Sewer Construction

**Sewer construction in LAND DEVELOPMENT projects involves the expenditure of large sums of money. Under that classification details of these improvements are reported**

**Ala.**, Montgomery—Hodgson and Jones, N. Perry St., have contract at \$8751 for installation of 10 sewer projects; J. B. McCrary Co., Citizens and Southern Bank Bldg., Atlanta, Ga., at \$5678 for 6 sections.

**Ala.**, Prichard—See Roads, Streets and Paving.

**Ark.**, Dumas—City, reported, call for bids in Jan. on sanitary sewer system; cost \$45,000; Frank R. Allen, Engr., Ark. Natural Gas Bldg., Pine Bluff. 12-25

**Ga.**, Atlanta—H. C. Benson, Engr. of Sewers, recommended expenditures of \$200,000 for covering main trunk sewers.

**Md.**, Baltimore—Domenico Cellinese, 213 S. High St., low bidder at \$16,962 for sewers, Sanitary Contr. 273. 12-25

**Mo.**, St. Louis—Bd. of Public Service receives bids Jan. 13 for sections J of River des Peres drainage work. See Want Section—Bids Asked. 12-25

**Okla.**, Barnsdall—Clair Haggard, Fairfax, reported, has contract for sanitary lateral sewers.

**Okla.**, Tulsa—Fike & Frye, Inc., 2531 E. Independence St., Tulsa, reported, has contract at \$11,922, for sewer project, No. 7-30, Daniel Tract sewer; H. A. Parker, City Engr.

**Tex.**, Houston—City plans storm sewer on Wayside Drive between Harrisburg and Navigation Blvd.; soon call for bids for storm and sanitary sewer in proposed Franklin Ave. extension between Louisiana St. and Washington Ave.; J. A. Sauls, Ch. Water Works Engr.

**Tex.**, Waco—Kelly & Isaacs, Waco, reported, has contract for storm sewers, Jefferson Ave.; J. E. Johnson Construction Co., 1000 Franklin Ave., Waco, for rein. conc. paving, and storm sewers Jefferson Ave.

**W. Va.**, Parkersburg—City, Allen C. Murdoch, Mayor, considering issuing bonds for extension and improvements to water system, sewer system and general park improvements.

### Telephone Systems

**D. C.**—See Maryland.

**La.**, Lake Charles—W. E. Hiller, applied to Federal Radio Comsn., Washington, for construction permit to erect new station, 1370 kc., 100 W.

**Maryland**—Chesapeake & Potomac Telephone Co., Baltimore, plans \$16,648,000 expenditure in 1931, of which \$4,840,000 is in Maryland; major products include outside plant, consisting of additional pole lines, exchange and toll circuits, aerial and underground cable and conduit, \$2,474,000; telephones, private branch exchange systems and other equipment, \$1,637,000; switchboard and central office equipment, \$1,637,000; land, buildings, additions and miscellaneous items, \$175,000; about \$3,462,000 expenditure planned for District of Columbia; \$3,916,000 in Virginia and \$4,430,000 in West Virginia.

**Md.**, Cumberland—WTBO, Associated Broadcasting Corp., applied to Federal Radio Comsn., Washington, for permission to install new equipment, increase power.

**Miss.**, Bay St. Louis—Southern Bell Telephone & Telegraph Co., Telephone Bldg., St. Louis, Mo., reported, plans installation of flashlight system; expend \$50,000.

**Mo.**, St. Joseph—KGBX, Foster-Hall Tire Co., applied to Federal Radio Comsn., Washington, for construction permit; install new equipment.

**Mo.**, St. Louis—Southwestern Bell Telephone Co., Telephone Bldg., reported, have plans ready for bids Jan. 15 for telephone building, S. E. cor. Eichenberger and January Ave.; brick and rein. conc., fireproof, 2

story and basement; cost about \$850,000; I. R. Timlin, Archt., 1916 Telephone Bldg. 10-23

**N. C.**, Charlotte—McAlpine Telephone Co., capital \$100,000, incorporated; Jasper C. Hutto, 29 Brownwood Ave.

**N. C.**, Greensboro—Station WBIG, reported, contracted with Jefferson Standard Life Insurance Co. for erection of broadcasting station on top of its building; construct 70 ft. lattice tower with direct connection to power room; applied to Federal Radio Comsn., Washington, for permission.

**Tennessee**—Western Union Telegraph Co., Inc., New York, reported, expend approximately \$860,000 in 1931 through its different departments, including \$110,000 for local office, \$450,000 for car shops and \$300,000 for pole yard.

**Tex.**, Sherman—Southwestern Bell Telephone Co., St. Louis, Mo., started excavation of 2 story, brick and conc. repeater station at Luella; cost \$45,000.

**Virginia**—Chesapeake and Potomac Telephone Co. of Virginia, Richmond, plans 1931 improvements involving expenditure \$3,916,000; directors authorized initial expenditure of \$569,025 to include construction of underground cable at Richmond airport, underground cable extensions to Barton Heights and Highland Park; erection pole lines and aerial cable on Roselawn Rd. and relocation of sections of Richmond-Newport News lines; install additional switchboards and central office equipment at Hampton; cable extensions at Ocean View central office; underground cable along Richmond-Petersburg highway, etc.

**Va.**, Roanoke—City votes Jan. 20 on bonds for sewer and streets. See Financial News Column.

**W. Va.**—See Maryland.

### Textile Mills

**Ga.**, Austell—Clark Thread Co., Newark, N. J., reported, have option on 1000 acre site and have plans ready for bids Jan. 15 for thread mill; first unit to include main building, warehouse and 6 cottages for operatives; cost \$300,000; 3 story, rein. conc. and steel, brick walls, tar and gravel roof, wood and cement floors; J. E. Sirrine & Co., Engrs., Main St., Greenville, S. C. 11-20

**N. C.**, Lynn—Pacolet Knitting Co., Inc., capital \$25,000, chartered; J. J. Cudd, 173 Oakland Ave., Spartanburg, S. C.

**Okla.**, Sand Springs—Commander Mills, Inc., reported, install water treatment equipment.

**S. C.**, Chester—Eureka Cotton Mills, reported, acquired Springstein Mills; changed name to Eureka Cotton Mills, No. 2.

**S. C.**, Laurens—Laurens Cotton Mill, reported, let contract to The Bahnsen Co., Reynolds Bldg., Winston-Salem, N. C., for humidifiers.

### Water Works

**Details of water works improvements in connection with the many LAND DEVELOPMENT operations will be found under that classification**

**Ga.**, Macon—Water Bd., reported, expend \$75,000 in construction and salvage work; complete main from pumping station to Monroe St., etc.

**Ky.**, Madisonville—City, reported, acquired water and light plant and 448 acres including 2 lakes.

**La.**, New Orleans—Sewerage and Water Bd., reported, received low bid from Gervais F. Favrot, Balter Bldg., New Orleans, at \$92,979 for Contr. 118-D, extension to present pressed brick pumping station building No. 7.

**Md.**, Baltimore—Plans will probably be out in about 10 days for proposed \$1,000,000 water tunnel from Lake Montibello to Druid Lake. 11-20

**Md.**, Baltimore—Caroline Foundry Co., 723 S. Caroline St., low bidder for manhole covers and frames for Bureau of Water Supply; Mason Grotter Co., 36 N. Front St., low bidder for pig lead.

**Md.**, Pikesville, Baltimore—DeCou & Chidlaw, Eutaw and Biddle Sts., low bidder for automatic pumping station. 12-25

**Miss.**, Bay St. Louis—City receives bids Jan. 19 for conc. water reservoir Carroll Ave. and Touline St.; plans, etc., from Sylvan J. Ladney, Public Utility Commr.



Md., Baltimore — Public Improvement Comsn. approved recommendation from its water committee that city petition Legislature to authorize a loan of \$35,000,000 for additional water supply, to be submitted to voters at city election in May; Charles F. Goob, Ch. Engr.; city plans having water survey made by Edw. G. Rost, Water Engr., and Warren Viessman, of Bureau of Mechanical-Electrical Service; under plan of loan resolution city plans to acquire water rights in Upper Patapsco river or Little Gunpowder River for emergency; in addition will acquire rights of way for water tunnel and mains, erection of filtration plant through which water would flow by gravity from large reservoir to Lake Ashburton; about 10 years required to complete program.

Mo., Cape Girardeau—Missouri Public Service Comsn., Jefferson City, reported, ordered construction of filter plant by Missouri Utilities Co. for water system.

Mo., Clarkton—City, reported, let contract to McWane Cast Iron Pipe Co., 208 S. La Salle St., Chicago, Ill., for pipe for water system; Stewart Machinery Co., Buder Bldg., St. Louis, Mo., for pump; N. E. Douglas, Clarkton, for pump house; bids rejected on tower, tank and pipe laying.

N. C., Bethel—Town, reported, voted to sell water and light franchise to Virginia Electric & Power Co., Richmond, Va.

N. C., Roanoke Rapids—C. M. Guest & Son, Sharpe St., Anderson, S. C., reported, have contract at \$63,000 for water system for Roanoke Mills; work includes 2,000,000 gal. filter plant, 1,250,000 gal. reservoir, 2000 ft. of c. i. pipe lines and pumping station; J. E. Sirrine & Co., Engrs., Main St., Greenville, S. C.

N. C., Rutherfordton — Southern Public Utilities Co., 432 S. Church St., Charlotte, reported, plans improvements to water and light plants at Rutherfordton and Spindale.

Okla., Lawton—City, reported, postponed indefinitely date of opening bids for \$600,000 water works, lately noted to open bids Dec. 19; F. E. Lawrence, Engr.

Tenn., Memphis—Bd. of Water Comms. receive bids Jan. 21 for pipe. See Want Section—Bids Asked.

Tex., Houston—American Cast Iron Pipe Co., Public Natl. Bank Bldg., reported, has contract for furnishing pipes and fittings for water mains on Chenevert, Ewing, Alameda and Elgin Sts.; Massengale & Sauer Co., for laying pipes.

Tex., Sinton—Commissioners Court of San Patricio County, reported, votes Jan. 17 on issuing \$80,000 bonds for water supply in Fresh Water Supply District No. 1.

Tex., Tenaha—City voted \$35,000 water works bonds.

W. Va., Martinsburg—City, C. H. Dailey, Mayor, plans water system improvements.

### Woodworking Plants

Fla., Tallahassee—Elaberta Crate and Box Co., incorporated; H. H. Hector, D. H. Simmons.

Fla., Tampa—Tampa Box Co. and Weldman-Fisher Co., reported, consolidated under name Leiman-Weldman Box Co.; will operate factories at Twenty-first St. and Second Ave. and at 1102 Highland Ave.; manufacture of tobacco boxes from Spanish cedar; importing raw material from Cuba.

### FIRE DAMAGE

Ala., Bessemer—J. C. Lewis Furniture Co.'s warehouse and adjoining building occupied by Colley Produce Co.; loss \$20,000.

Ala., Huntsville—Lyric Theater; Lignon & Farrell's store and several other buildings; loss \$200,000.

Ala., Opp—Donaldson Hotel; Finlay & Co.'s building; loss \$50,000.

Ark., Stamps—W. H. Blake's dry goods store; loss \$14,000.

Ark., Stephens—Smith Bros. & Co.'s store; loss \$25,000.

Ga., Atlanta—Five-story building at Broad St. and Viaduct, owned by Mrs. Josephine Inman Richardson and managed by Hugh Richardson Co., 160 Peachtree St., N. W.; loss \$75,000.

Ga., Baxley—Mrs. J. E. Overstreet's residence, Park Ave., West; loss \$10,000.

Ga., Buford—J. T. Rowe's building; White Bldg.; loss \$25,000.

Ga., Rome—Building occupied by Esserman & Co., department store; loss \$12,000.

Ky., Adairville—Adairville High School; loss \$42,500; address School Bd.

La., Alexandria—Rooming house, 1801 Third St., owned by L. B. Baynard, Jr., State Auditor, Baton Rouge; loss \$10,000.

La., New Orleans—Valentino Theater, 2101 Frenchmen St., owned by Frank Misuraca and Louis Chincella, both 1031 Dauphine St.; loss \$40,000.

Md., Ashton—Dr. Louis Bussler's residence. Md., Baltimore—Baltimore Country Club, Roland Park, Heyward Boyce, Pres., Maryland Trust Bldg.; loss \$150,000.

Md., Baltimore—Baltimore Post Building, Lombard and Hanover Sts., occupied by the Baltimore Post, Andrew D. Brashears, Editor; loss \$200,000.

Md., Crisfield—Marioners M. P. Church, State road near Crisfield; Rev. I. S. Owen, Pastor.

Miss., Clarksburg—James Magnini's residence, Lincoln Ave.; loss \$10,000.

Miss., Hattiesburg—Woodruff Furniture Co.'s warehouse, Broad and Dearborn Sts., A. T. Woodruff, Pres.; loss \$13,500.

Miss., Itta Bena—C. W. Allen's residence, owned by Chas. Kelly, Chicago, Ill.; loss \$12,000.

Miss., Lexington—R. and B. Sontheimer, Inc.'s store; loss \$30,000.

Miss., Water Valley—Three bldgs., including Elks' Hall, on Wood St., owned by Wagner Estate; loss \$25,000.

N. C., High Point—Johnson & Murphy Shoe Store at 128 S. Main St., J. B. Johnson, Mgr.; loss \$10,000.

N. C., Stecoah—High school building; loss \$40,000; address School Bd.

Okla., Checotah—Cozy Theater, owned by J. L. Cooper; loss \$10,000.

Okla., Luther—Luther Consolidated School; loss \$25,000; address Mrs. Ida M. Hale, Oklahoma County Supt. of Schools, Oklahoma City.

### Association and Fraternal

Fla., Pensacola—Frank Marston Post, American Legion, Judge Robt. P. Stout, member, plans to start work Feb. 1 on \$15,000 clubhouse; hollow tile and stucco, 1 story.

Va., Tenn., Bristol—Masonic Temple Assn., Dr. H. H. Adair, member, probably call for bids latter part of Jan. for \$50,000 temple, Piedmont and Cumberland Sts.; brick and conc., 3 stories, 50x94 ft.; G. M. & G. C. Stone, Architects.

### Bank and Office

Ga., Atlanta—United Corp., Candler Bldg., receives bids Jan. 15 to remodel and erect additions to fireproof bldg., Luckie, Forsyth and Broad Sts., for stores and offices; structure 6 stories, add 2 stories, 181x48 ft., rein. conc. and struct. steel, brick and tile, ornate metal work, Indiana limestone or terra cotta trim, linoleum, tile and terrazzo floors, Cutler mail chutes; A. Ten Eyck Brown, Archt.; A. Barili, Asso. Archt.; Robt. G. Loe, Struct. Engr., all Forsyth Bldg.; following contractors estimating: Southern Ferro Concrete Co., 70 Ellis St., N. E.; Flagler Co., Red Rock Bldg.; Shelverton Construction Co., Bona Allen Bldg.; Griffin Construction Co., 452 Spring St.; Barge-Thompson Co., 136 Ellis St., N. E.

Okla., Oklahoma City—Schumacher & Winkler, Architects, Hightower Bldg., have drawn plans for \$250,000 bonded warehouse and office bldg.; work probably start within 60 days; fireproof, rein. conc., brick and terra cotta, 11 stories, site 100x40 ft., special elevators, signalling system; 98 offices. See Buildings Proposed—Warehouses.

### Churches

Fla., Pensacola—Hebrew Congregation, D. S. Oppenheimer, Pres., 503 N. Barcelona St., erect \$40,000 to \$50,000 synagogue to replace Temple Beth-El lately noted damaged by fire; \$34,000 raised.

Fla., Jacksonville — First M. E. Church, South, Rev. O. E. Heath, Pastor, selected Mark & Sheftail, Architects, Clark Bldg., to supervise \$50,000 remodeling work of structure lately noted damaged by fire.

Okla., McAlester—Palace Theater, building also occupied by John Alexander Tailoring Co., Dr. W. S. Phillips' dental parlors and Majestic Barber Shop; loss \$100,000.

S. C., Ellmore—Garage and warehouse of Ellmore Chevrolet Co., building owned by W. E. Fogle.

Tenn., Etowah—Etowah Cafe, owned by J. C. Williams; building owned by Tom Sherman, Athens; loss \$50,000.

Tex., Frankston—J. M. Dabbs' building; loss \$18,000.

Tex., Houston—W. A. Mathee's residence, 2712 Bagby St.; loss \$11,000.

Tex., Lubbock—Harold Jones Laundry, 1618 Ave. F; loss \$10,000.

Tex., Nacogdoches—Boarding home for college students operated by Charles Lowry at Stephen F. Austin College; loss \$10,000.

Tex., Nederland—J. R. Ware's bldg., occupied by Post Office, Erwin Ware's cafe, C. B. Hanchett's grocery and M. L. Boyer's barber shop; loss \$20,000.

Va., Dayton—Three store buildings housing Joseph K. Ruebush Co., book dealers; Ruebush Kieffer Co., music publishers; Shenandoah Press, printers; loss \$25,000.

Va., Franklin—Gordon's Department Store; Franklin Bakery; One Dollar Store; loss \$30,000.

Va., Gretna—High school; loss \$10,000; Fletcher B. Watson, Supt., Pittsylvania County Bd. of Education, Chatham.

Va., Petersburg—Planing Mill of Petersburg Woodworking Co., 1 Plamingo St.; loss \$25,000.

Va., Roanoke—Ponce de Leon Hotel, owned by W. C. Turner, De Moss Taylor, A. E. King and Ballard P. Huff Estate; loss \$200,000.

Va., South Boston—Lawrence C. Ingle's residence, Main St.; loss \$8000.

## BUILDING NEWS

### BUILDINGS PROPOSED

La., New Orleans—Our Lady of Perpetual Help R. C. Church, Rev. C. Schneider, Pastor, Concession, Plaquemine Parish, receives bids until Jan. 22 at office Wm. R. Burk, Archt., Balter Bldg., for chapel; frame and stucco, 1 story, 37x78 ft., rein. conc. foundation; Johns-Manville asbestos shingle roof; Celotex walls; elect. fixtures by owner.

Tenn., Johnson City—Central Baptist Church rebuild structure lately noted burned at \$125,000 loss.

### City and County

La., Crowley—City erect \$65,000 city hall-auditorium; brick, steel and tile, 2 stories, tile, marble and wood floors, rein. conc. foundation, comp. and tile roof; W. T. Nolan, Archt.-Engr., Canal Bk. Bldg., New Orleans. See Want Section—Building Material and Equipment.

La., New Orleans—City Commission Council, Theo. Grunewald, member, selected Sam Stone, Jr. & Co., Masonic Bldg., as architects for remodeling or rebuilding public markets; \$1,000,000 bonds available.

Md., Rockville—Montgomery County Bd. of Comms. probably call for bids in about 2 weeks for \$425,000 court house; Smith & Edwards, Architects, 1707 I St., N.W., Washington; J. J. McDevitt Co., Contr., Builders Bldg., Charlotte, N. C.

Okla., Blackwell—City, Dwight Randall, City Clk., soon have plans out for \$40,000 library; brick, 2 stories, 50x90 ft., conc. floors, tile roof; Hawk & Parr, Architects, First Natl. Bank Bldg., Oklahoma City.

Okla., Stillwell—Adair County Bd. of Comms. rejected bids for \$75,000 court house and jail; \$100,000, brick and rein. conc., 3 stories; Huseman Co., Archt., Chickasha.

Tex., Menard—Menard County, J. H. Matthews, County Judge; \$150,000 court house and jail; Withers & Thompson, Architects, 202 Holmes Bldg., Fort Worth, probably complete plans in 3 weeks; monolithic conc. construction.

W. Va., Parkersburg—City, Allen C. Murdoch, Mayor, plans election on bonds for fire station repairs, fire stations and apparatus, repairs and additions to City Hospital, repairs and comfort station addition to City building.

## Dwellings

D. C., Washington—E. S. Beall, Jr., 1261 N. H. Ave., N. W., has permit for 2 brick dwellings, 1332-36 Michigan Ave., N. E.; 2 stories; total \$12,000.

D. C., Washington—Jeffrey Parsons, 1839 Wyoming Ave., N. W., has permit for \$28,000 residence, 2220 R St., N. W.; brick, 3 stories.

D. C., Washington—Louis R. Moss, Archt., 1653 Pennsylvania Ave., N. W., drawing plans for \$40,000 residence and garage, Massachusetts Ave., N. W.; brick, stone trim, 2½ stories, steam heat, slate roof.

D. C., Washington—Wm. G. Hill, 3803 Huntington St., N. W., has low bid at \$30,596 from D. M. Marthinson, 1107 Connecticut Ave., for residence, River Rd., Montgomery County; Porter & Lockie, Archts., 1800 E St. 12-11

D. C., Washington—Leo Walsh, care Porter & Lockie, Archts., 1800 E St., erect shingle and clapboard residence; 1½ stories, conc. foundation, linoleum floors, wood shingle roof, hot water heat, tile bath; Bradbury & Mohler, 1427 I St., low bidder.

D. C., Washington—E. B. Markham, 5118 Wisconsin Ave., N. W., erect stone residence, Ellicott and 30th Place; 2½ stories, slate roof, tile baths; Wm. F. Wagner, Archt., Loughborough.

Fla., Miami Beach—Location Holding Co. erect dwelling, Euclid Ave. near 15th St.; constr. probably by C. E. Shappell, 1350 Collins Ave.

Ga., Austell—Clark Thread Co., John B. Clark, Pres., Newark, N. J., erect 60 operatives' cottages in connection with constr. of \$500,000 thread mill near Austell; J. E. Sirrine & Co., Engrs., Greenville, S. C.; plans about Jan. 15.

La., New Orleans—E. L. Markel, Bldr., 3838 Louisiana Ave. Pkwy., erect single dwelling, 81 Fontainebleau Drive.

La., New Orleans—Following contractors estimating on residence for G. P. Bartels, 2606 N. Tonti St., bids Jan. 15 by Jones, Roessle & Olschner, Archts., Maison Blanche Bldg.; Geo. J. Lupo, 2231 Main St.; Chas. A. Louviere, 510 S. Hennessy St.; L. Delarosa, 616 Poydras St.; Ernest J. Montret, 2219 Dante St. 1-1

La., New Orleans—Robt. E. Smith, 131 N. Rochelave St., erect 10 dwellings, Lakeview; tile roof, sheet metal work.

La., Onelousas—Allen Dezanche rejected bids for \$10,000 residence; Herman J. Duncan, Archt., 120 Murray St., Alexandria. (Lately noted let contract.) 12-11

Miss., Columbus—W. B. Gray erect brick veneer residence; 1 story and basement, tile baths, comp. roof; Claude H. Lindsley, Archt., Jackson Tower Bldg., Jackson; preliminary plans.

Miss., Jackson—Mrs. M. L. Small erect \$12,000 residence; brick veneer, hardwood floors, tile roof, tile bath, built-in features; J. Frazer Smith, Archt., Goodwyn Inst. Bldg., Memphis, Tenn., soon complete plans.

N. C., Raleigh—Julian A. Rand, 6 Ferndale Lane, open bids about Jan. 20 for \$15,000 residence; 2 stories and basement, 32x60 ft., oak floors, brick foundation; Nelson & Cooper, Archts., 120½ S. Salisbury St. Address Archts. See Want Section—Building Material and Equipment. 1-1

Tex., Beaumont—Mrs. John L. Keith, 2188 North St., erect \$25,000 residence, Elghth and Long Sts., McKee Place; Mediterranean type, brick and stucco, 10 rooms; Fred C. Stone, Archt., Goodhue Bldg.; drawing plans.

## Government and State

Ala., Maxwell Field, Montgomery—Following prospective estimators on paint, oil and dope warehouse, maintenance shop, warehouse, garage at Maxwell Field, bids Jan. 16 by Constructing Quartermaster, Capt. M. A. McFadden: Smith-Pew Construction Co., 435 Irwin St., N. E.; Norwood Griffin Co., Bona Allen Bldg.; A. K. Adams Co., 542 Plum St., N. W., all Atlanta, Ga.; Batson-Cook Co., West Point, Ga.; Home Builders Service Co., 831 Broad St., Chattanooga, Tenn.; Samford Bros., 301 Washington Ave.; Algernon Blair, First Natl. Bk. Bldg.; Hodgson-Jones Construction Co., N. Perry St., all Montgomery. 12-25

D. C., Washington—Treasury Dept., Jas. A. Wetmore, Act. Supvg. Archt., Washington, D. C., has low bid at \$48,062 from M. Eisenberg & Son, 224 Centre St., New York, for lighting fixtures for Department of Commerce.

Fla., Kissimmee—Treasury Dept., Jas. A. Wetmore, Act. Supvg. Archt., Washington, D. C., probably call for bids during Feb. for post office.

Fla., Lake City—Treasury Dept., Jas. A. Wetmore, Act. Supvg. Archt., Washington, D. C., probably call for bids during May for post office.

Fla., Key West—Treasury Dept., Jas. A. Wetmore, Act. Supvg. Archt., Washington, D. C., probably call for bids during May for post office. 7-31

Fla., Raiford—Board of Commrs. of State Institutions, Tallahassee, approved constr. of \$18,000 death and confinement house, State Penitentiary; C. H. Hammatt, State Electrician-Engr., Jacksonville.

Ga., Atlanta—Treasury Dept., Jas. A. Wetmore, Act. Supvg. Archt., Washington, D. C.; \$1,500,000 post office and Federal bldg., Spring, Hunter and S. Forsyth Sts.; preliminaries being made by A. Ten Eyck Brown, Archt., and A. Barili, Asso. Archt., both Forsyth Bldg., Atlanta; fireproof, 5 stories and basement, about 300x150 ft., steel, tile and conc. floors, rein. conc. foundation, tile and tar and gravel roof; furnishings, equipment, etc., \$200,000. See Want Section—Building Material and Equipment. 1-1

Ky., Murray—Treasury Dept., Jas. A. Wetmore, Act. Supvg. Archt., Washington, D. C., making test survey of site for post office.

La., New Orleans—Department of Justice, Sanford Bates, Director, Bureau of Prisons, Washington, D. C., has plans completed by D'Boil & Owen, Ltd., Canal Bk. Bldg., New Orleans, to remodel old Mint bldg. for Federal prison; accommodate 300; new partitions, flooring, waterproofing, heating system, cell blocks, etc., \$100,000. 10-30

Md., Aberdeen Proving Ground—Constructing Quartermaster receives bids until Feb. 4 for hospital; \$60,000. 6-5

Mo., West Plains—Treasury Dept., Jas. A. Wetmore, Act. Supvg. Archt., Washington, D. C., opens bids in duplicate Jan. 26 for post office; drawings from office Supvg. Archt.

N. C., Salisbury—Additional prospective estimators on extension and remodeling of post office, \$175,000, bids Jan. 13 by Treasury Dept., Jas. A. Wetmore, Act. Supvg. Archt., Washington, D. C.; R. K. Stewart & Son, High Point, N. C.; Fanning & Sweeney, Inc., Greensboro, N. C.; Ralph S. Herzog, 10 S. 18th St.; Theriault Contracting Co., 534 E. Johnson St., both Philadelphia, Pa.; John M. Geary Co., Box 1253, Asheville, N. C.; Yeager & Sons, Inc., Danville, Ill.; James I. Barnes, Logansport, Ind.; Ellicott Building Co., Inc., Hickory, N. C.; Wm. MacDonald Construction Co., Synd. Trust Bldg.; Geo. Griffiths Construction Co., Arcade Bldg., both St. Louis, Mo.; Worsham Bros., Empire Bldg., Knoxville, Tenn.; On Elevators—Westbrook Elevator Manufacturing Co., Spring St., Danville, Va.; Weekley Elevator Co., 447 Edgewood Ave., S. E., Atlanta, Ga.; Otis Elevator Co., 810 18th St., N. W.; Houghton Elevator & Machine Co., 1103 Vermont Ave., N. W.; A. B. See Elevator Co., Inc., 1343 14th St., N. W.; General Elevator Co., 1200 15th St., N. W., all Washington; Gurney Elevator Co., 109 W. 64th St., New York; General Electric Co. (J. J. Matson), Schenectady, N. Y.; Warsaw Elevator Co., Mercer and Grant Sts., Baltimore, Md.; Westinghouse Electric Elevator Co., 30th and Walnut Sts., Philadelphia, Pa.; Grahn Construction Co., Red Rock Bldg., Atlanta, Ga. 1-1

Va., Langley Field, Hampton—Following are prospective bidders on 4 barrack bldgs., Langley Field, bids Jan. 16 by Constructing Quartermaster, Fort Monroe, Va.: Davis Bros., Inc., 1716 Summit Ave.; W. P. Thurston Co., P. O. Box 2089; W. F. Jackson Co., Inc., 207 Bldrs. Exch. Bldg.; Wise Granite & Construction Co., Amer. Natl. Bk. Bldg.; John W. Cowper Co., Inc., State Planters Bk. Bldg.; Miller Manufacturing Co., Stockton and Sixth Sts., all Richmond, Va.; Harwood Construction Co., Law Bldg.; Noland Co., Inc., 322 28th St., both Newport News, Va.; W. F. Martens, P. O. Box 128; Chas. T. Taylor, 17 S. King St., both Hampton, Va.; J. A. Jones Construction Co., 411 Commercial Bk. Bldg.; B. H. Bouigny, Inc., P. O. Box 534; W. R. Rowan Building Estimating Service, 215 Bldrs. Bldg., all Charlotte, N. C.; Batson-Cook Co., West Point, Ga.; North-Eastern Construction Co., Nissen Bldg., Winston-Salem, N. C.; Fiske-Carter Construction Co., Worcester, Mass., and Spartanburg, S. C.; Angle-Blackford Co., Amer. Bk. Bldg.; W. W. Dick, 244 Bellemade St., both Greensboro, N. C.; C. M. Buchanan & Co., Inc., Clarks-ville, Va.; Thompson Construction Co., Rosemary, N. C.; Crane Co., 1225 I St., N. W., Washington, D. C.; Enterprise Co., Twin City Bldg.; Hall-Hodges Co., Inc., 806 Citizens Bk. Bldg.; American Sheet Metal Corp., Colley Ave. and 28th St., all Norfolk, Va.; Ralph S. Herzog, Fuller Bldg., 10 S. 18th St.; Geo. H. Evans, Inc., 1416 Vine St.; Hughes-Foulkrod Co., Schaaf Bldg.; J. S. Thorn Co., Allegheny Ave. and 20th St., all Philadelphia, Pa.; J. F. Fitzgerald Construction Co., 38 Chauncy St., Boston, Mass.;

Portsmouth Lumber Corp., High St. and Belt Line R. R., Portsmouth, Va.; Kewanee Boiler Corp., Kewanee, Ill.; Adams Construction Co., 217 Clarkson Court, Chicago, Ill.; MacDonald Construction Co., Synd. Trust Bldg., St. Louis, Mo.; Consolidated Supply Co., Inc., 1102 N. Charles St.; J. L. Robinson Construction Co., 522 Park Ave.; Dietrich Bros., Pleasant and Davis Sts., all Baltimore, Md.; MacDonald Spencer Engineering Co., Inc., Graybar Bldg., New York; Bethlehem Fabricators, Inc., Bethlehem, Pa.; Decatur Iron & Steel Co., Decatur, Ala.; American Mason Safety Tread Co., P. O. Box 1221, Lowell, Mass.; Ingalls Stone Co., Bedford, Ind.; A. S. Bacon & Sons, P. O. Box 742, Savannah, Ga. 12-25

S. C., Dillon—Treasury Dept., Jas. A. Wetmore, Act. Supvg. Archt., Washington, D. C., opens bids (in duplicate) Jan. 27 for post office, etc.; drawings from office Supvg. Archt. 8-21

Tex., Fort Sam Houston, San Antonio—Constructing Quartermaster, Capt. H. B. Nurse, Acting Constructing Q. M., have plans ready about Jan. 16 for 16 sets company officers' quarters, Fort Sam Houston; brick, struct. clay tile, struct. steel, rein. conc., 2 stories and basement, 32x37 ft.; bids recently rejected. 12-25

Tex., Mineral Wells—War Dept., Washington, plans following improvements at Camp Wolters: Covered picket line, conc. saddle rooms, additional mess halls, 1 brigade and 2 regimental administration and supply bldgs., and hospital; Brig.-Gen. Jacob F. Wolters, Commandant, 56th Cavalry Brigade, Texas National Guard, Houston.

Tex., Randolph Field—Constructing Quartermaster, Capt. A. W. Parker, receives bids until Jan. 16 for elect. substation and gas meter house; brick, tile, stucco, cast stone and rein. conc., 1 story, steel windows and partitions, tile roof. 1-1

Va., State Farm—State, Frank Bane, Commr. of Public Welfare, Richmond, start work at once on State Industrial Farm for Women, near State Farm; 2 units first, accommodate 40; practically all material except cement and metal window and door frames, from State institutions; Carneal, Johnston & Wright, Engrs.-Constr. Supvrs., Electric Bldg., Richmond. 8-28

## Hospitals, Sanitariums, Etc.

Ala., Mobile—Roman Catholic Diocese of Alabama and Northern Florida, Rev. Edw. J. Hackett, interested, having plans drawn by Carey & Dowling, Archts., First Natl. Bk. Annex, for \$250,000 hospital, Bishop Allen Memorial Home. 1-1

Fla., Key West—Navy Dept., Bureau of Yards and Docks, Washington, D. C., probable call for bids during April for constr. work.

Miss., Gulfport—United States Veterans Bureau, L. H. Tripp, Ch. Constr. Div., Arlington Bldg., Washington, D. C., receives bids in triplicate at Room 764 until Feb. 3 for sewage disposal plant, U. S. Veterans Hospital, including grading; work includes excavating, rein. conc. constr., hollow tile, steel sash, tile roofing, stucco, carpentry, elect. work, C. I. sewage force main, connecting sewage works, pumps, sand filters, chlorinators, etc.; drawings from Room 764 or from Supvg. Supt. of Constr. at hospital. 12-18

Miss., Jackson—Mississippi Building Comsn., R. L. Brown, Sec., rejected bids unopened for 12 bldgs. (\$690,000) for new \$5,000,000 State Hospital for Insane, Rankin County; N. W. Overstreet, Archt., Standard Life Bldg. 12-25

Okla., Lawton—Dr. J. M. Thompson, Walters, reported, abandoned plans for erection of \$100,000 hospital; E. H. Eads & Co., Archts., Chickasha. 12-11

Tex., Houston—Houston City Council, Walter E. Monteith, Mayor, and Harris County Bd. of Commrs., erect \$1,500,000 city-county hospital; City Council on its own behalf has appointed A. C. Finn, Bankers Mtg. Bldg., and Joseph Finger, Democratic Bldg., as architects; County has not ratified appointment. 11-6

## Hotels and Apartments

Ga., Brunswick—Millard Reese, C. L. McCarthy and others rebuild Glynn Hotel and United Supply Bldg., recently noted burned.

Md., Montgomery County—Louis T. Ron-leau, Archt., Investment Bldg., Washington, D. C., reported, preparing plans for \$1,000,000, 14-story, 100x350 ft., brick, conc. and hollow tile, limestone trim apartment.



Mo., St. Joseph—Atlas Realty & Development Co., Dennis Flynn, Sec., Jerome Hotel, ready for bids about April 1 for \$500,000, 12-story, 70x140 ft., struc. steel, brick, stone and terra cotta Faust Hotel, Ninth and Edmond Sts.; Ellis Charles, Archt., Wichita, Kans. 12-25

Okla., Guymon—Ellis Charles, Archt., Wichita, Kans., preparing plans for \$140,000, 5-story, 60x100 ft., brick, 60-room hotel; financing is going forward; project being promoted by Chamber of Commerce. 8-21

Tenn., Memphis—J. L. White, Jr., 333 Angelus Place, has plans complete and soon start work on \$45,000, 2-story and basement, brick apartment, Poplar and McNeil Sts.; comp. roof, hardwood floors; R. L. Sieg, Archt., Sterick Bldg.

Tex., Dallas—R. H. Balbridge, 5600 Sears St., has permit for \$15,000, 40-room, brick veneer apartment, 5606 Sears St.

Tex., Fort Worth—Majestic Building Co., Majestic Bldg., reported, plans 8-story combination hotel, office and theater building. See Buildings Proposed—Theaters.

Tex., Houston—Brazos Hotel expend \$50,000 to remodel building for hotel purposes.

Tex., Houston—H. B. Tennison remodel Tennison Hotel, 801 Washington St., at cost of \$20,000; Joseph Finger, Archt., Democratic Bldg.

Tex., San Antonio—Gunter Hotel, Paul McSweeney, Mgr., announced that work on 25-story hotel is planned soon.

Va., Yorktown—Revival of plans to complete \$1,500,000 hotel before Oct. 13, 1931, has been announced by Charles R. Leconte, rep. of John F. Braun, Otis Bldg., Philadelphia, Pa., Pres. of Yorktown Hotel Corp.; foundation was prepared and conc. and steel framework of structure erected five years ago; work was then abandoned; hotel will be in 25,000-acre National Park area; provide golf course beach, polo grounds, tennis courts and riding school in connection; architecture will be in keeping with restoration work being done in Yorktown-Williamsburg-Jamestown area.

### Miscellaneous

Ark., Jasper—J. I. Lieblong, Chmn., Bldg. Comm., promoting erection of community building.

Ark., Jasper—Bert H. McCarty purchased 200-acre tract on Highway No. 43 and plans development for summer resort, including buildings and creation of lake covering 2½ acres.

Fla., Miami Beach—Miami Yacht Club plans clubhouse, 14th St. and West Ave.

Md., Betterton—Royal Swan Corp., Fuller Bldg., Philadelphia, Pa., receives bids Jan. 12 for 6-story hotel and 3-story amusement building; 42x250 ft., brick, cinder block, hollow tile and steel frame, gypsum or steel partitions, built-up roof; H. L. Reinhold, Jr., Archt., 10 S. 18th St., Philadelphia; W. J. Elliott, Coatesville, Pa., estimating. 12-11

N. C., High Point—High Point Country Club remodel clubhouse; \$16,000; Fred B. Klein, Archt., 114 W. Washington St., in charge of work.

N. C., Morehead City—A. Whitcomb, Archt., New York, purchased Morehead Villa, hotel with 3-acre tract, and develop for resort; remodel hotel, improve grounds, build docks, etc. 1-1

Okla., Bartlesville—Guy Swain erect log cabins, dining room, store, etc., in connection with development of 640-acre site for bathing beach.

Va., Richmond—Virginia Boat Club, Mayo Island, J. Vaughn Gary, V.-P., rebuild clubhouse recently noted destroyed by fire at loss \$30,000.

### Schools

Ark., Ben Lomond—Rural Special School Dist. No. 1, care Byron Goodson, Sevier County Supt. of Schools, DeQueen, soon ready for bids for \$12,000, 1-story, 7-room school; comp. roof; plans by State Bd. of Education, C. M. Hirst, Statehouse, Little Rock.

Ark., DeWitt—DeWitt Special School Dist., care J. M. Henderson, Jr., Arkansas County Supt. of Schools, ready for bids early in Jan. for 2-story and basement, brick and rein. conc. high school; H. Ray Burks, Archt., Wallace Bldg., Little Rock.

Ark., Warren—Warren Special School Dist. plans rebuilding high school recently damaged by fire; 2 stories and basement, brick and conc.

D. C., Washington—District Commrs., Roland M. Brennan, Dist. Bldg., having plans

prepared for following junior high schools: Gordon, \$255,000; Powell, \$225,000; MacFarland, \$500,000; Stewart, \$240,000; A. L. Harris, Municipal Archt., Dist. Bldg.

D. C., Washington—Following contractors estimating on 4-room addition to Deanwood School, bids Jan. 14 by District Commrs., Roland M. Brennan, Dist. Bldg.; Henry W. Cord Co., Inc.; Graham Construction Co.; Loudoun-Rust Co., 1406 G St., N. W., all Washington; North-Eastern Construction Co., 6 N. Madison St., Baltimore; Lutt Construction Co., 2218 Chestnut St., Philadelphia. 1-1

Fla., Dover—Dover School Dist. defeated \$45,000 bonds for school building. 11-27

Fla., Lemon City, Miami—Dade County Bd. of Public Instruction, H. H. Filer, Chmn., having plans prepared by Geo. L. Pfeiffer, Biscayne Bank Bldg., and E. L. Robertson, Calumet Bldg., both Miami, for \$100,000 auditorium and 1-story, 123x127 ft., cafeteria at Agricultural High School, N. W. 2nd Ave. at 62nd St.

Fla., Miami—Dade County Bd. of Public Instruction, H. H. Filer, Chmn., selected Kiehnell & Elliott, Seybold Bldg., prepare plans for \$30,000, rein. conc. block and stucco 6-room school, N. E. 5th Ave. between 66th and 67th Sts.

Ky., Adairville—School Bd. rebuild Adairville High School noted burned at loss \$42,500.

Ky., Louisville—Bd. of Education, Samuel D. Jones, Bus. Mgr., receives bids Jan. 23 for \$275,000 school on Crittenden Drive; 2 stories, wood floors, comp. roof; J. M. Colley, Archt., Eighth and Chestnut Sts. See Want Section—Building Material and Equipment. 12-18

La., Monroe—Ouachita Parish School Bd., T. O. Brown, Supt., having plans prepared by J. W. Smith & Associates, Ouachita Natl. Bank Bldg., for \$250,000 junior college building. 11-3

La., Marrero—Following contractors estimating on 2-story, 128x135 ft., brick, stone trim, Doctor Marcus Flengold Memorial, at Hope Haven Mechanical and Industrial School for Roman Catholic Diocese of New Orleans, bids not determined; J. A. Haase, Jr., 916 Union St.; Hyman Rabinovitz, 740 Poydras St.; Geo. J. Glover Co., Inc., Whitney Bank Bldg.; Lionel F. Favret, Louisiana Bldg.; Geary-Oakes Co., A. M. Fromberg, both Queen and Crescent Bldg., all New Orleans; comp. built-up and arch roof, gas steam heat, cellized wood and cement floors; A. S. Montz, Archt., 740 Poydras St., New Orleans.

La., Romeville—Following contractors estimating on alterations and additions to school, bids Jan. 13 by St. James Parish School Bd.; Convent; Giltz Construction Co., Balter Bldg.; Wm. Wallace, Pere Marquette Bldg.; E. A. Rossi, 318 Brockenbaugh Court; E. L. Markel, 3838 Louisiana Ave. Parkway; Caldwell Bros., 816 Howard Ave.; J. A. Haase, Jr., 916 Union St., all New Orleans; R. L. Roland, 1908 Lee St., Alexandria; Wm. R. Burk, Archt., Balter Bldg., New Orleans. 12-25

La., Ville Platte—Evangeline Parish School Bd., F. V. Launey, Supt., receives bids Jan. 20 for two frame schools in Tate Cove School Dist. No. 1; plans from Herman J. Duncan, Archt., 120 Murray St., Alexandria.

Md., Baltimore—Bd. of Public Improvement Comsn., H. J. Leimbach, Supv. Engr., Municipal Office Bldg., receives bids Jan. 21 for \$150,000, school, Preston St. between Druid Hill and Pennsylvania Ave.; Flournoy & Flournoy, Archts., 334 St. Paul St.; Henry Adams, Inc., Mech. Engr., Calvert Bldg.; Henry Massart, Struct. Engr., 328 N. Charles St. 12-25

Md., Rising Sun—Cecil County School Bd., H. T. Ruhl, Supt., Elkton, receives bids Jan. 20 for 2-story, 70x110 ft., brick high school; 6 classrooms, vocational shops, auditorium, gymnasium and cafeteria; Clyde N. & Nelson Friz, Archts., Lexington Bldg., Baltimore; following contractors estimating: Tase-Norris Co., 906 Cathedral St.; DeCou & Chidlaw, 857 N. Eutaw St.; John Cowan & Son, 17 E. Lafayette Ave.; Thos. Hicks & Son, 106 W. Madison St.; Price Construction Co., Maryland Trust Bldg.; Lacchi Construction Co., Munsey Bldg., all Baltimore; E. Wilson Booth, Salisbury. 12-11

Miss., Vicksburg—Warren County Bd. of Education, Z. E. Oswalt, Supt., receives bids Jan. 19 for frame cottage on campus of Culkin Academy; W. A. Stanton, Archt., First Natl. Bank Bldg.

Mo., Columbia—University of Missouri, Leslie Cowan, Sec., indefinitely postponed erection of \$40,000 addition to Gwinn Hall.

N. C., High Point—Bd. of School Commrs., T. W. Andrews, Supt., receives bids Feb. 4 for \$300,000 to \$400,000, 3-story, brick, tile and rein. conc. junior high school; terra cotta trim; Harry Barton, Archt., Jefferson Bldg., Greensboro. 10-16

N. C., Winston-Salem—Bd. of School Commrs., reported, erect Richard J. Reynolds High School; architect not selected; Mayor Geo. W. Coan, Jr., Chmn., Bldg. Comm.

Tenn., Bolivar—Hardeman County Bd. of Education, Miss Katherine Ingram, plans 1-story addition to high school.

Tex., Hunt—Hunt Ind. School Dist. voted \$25,000 bonds for school building; select architect about March 1.

Tex., Palestine—School Bd. ready for bids about Jan. 20 for \$25,000, one-story, 142x75 ft., brick and conc. school; tile roof, pine floors; Theo. S. Maffitt, Archt., 510 N. Sycamore St. See Want Section—Building Material and Equipment. 1-1

Va., Farmville—State Teachers' College plans library building.

Va., Richmond—Davis Brothers, Inc., 1716 Summit Ave., low bidder on Maryland Hall, University of Richmond. 10-16

Va., Rice—Prince Edward County School Bd., Farmville, rebuild high school recently noted burned; \$30,000, brick and conc.

Va., University—University of Virginia, Dr. Edwin A. Alderman, Pres., ready for bids about Feb. 1 for \$350,000, 3-story, rein. conc., steel, brick and tile Clark Memorial Law Bldg.; plans by Advisory Board, John K. Peebles, Chmn., Law Bldg., Norfolk; University hopes to have \$500,000 for engineering building; of this \$250,000 has been appropriated by state. 12-4

### Stores

Ala., Huntsville—Humphrey & Son Drug Store, Dr. Walter L. Humphrey, rebuild store to replace structure burned at loss of \$60,000.

D. C., Washington—M. Frank Rubbert erect \$10,000, 2-story, brick store and apartment, 2331 Calvert St., N. W.

Ga., Atlanta—Palmer, Inc., Palmer Bldg., remodel 3-story store and office building, Edgewood and Pryor Sts.; Burge & Stevens, Archts., Marietta Bldg.; bids in.

Ga., Atlanta—Daniel Bros., 45 Peachtree St., N. E., remodel store; 2 stories and basement, rein. conc., struc. steel, brick, hollow tile, terra cotta trim, cement, wood, linoleum and terrazzo floors; Daniell & Beutell, Archts., Georgia Savings Bank Bldg.; bids in. 1-1

Ga., Atlanta—Hugh Richardson Co., 160 Peachtree St., N. W., Hugh Richardson, Jr., Mgr., reconstruct 5-story building damaged by fire at loss \$75,000.

Ga., Brunswick—E. E. Shimer plans rebuilding structure recently noted burned.

Md., Baltimore—Dr. Grover C. Ney, 2401 Linden Ave., having plans prepared for store, 966 Whitelock St.

Mo., Springfield—Milligan Investment Co., 311 W. Water St., erect \$100,000, 2-story and basement, 40x117 ft., brick and rein. conc., fireproof store, South Side Square; W. T. Grant Co., Lessee, 455 Seventh Ave., New York, soon let contract.

Tenn., Memphis—J. Bayard Snowden soon let contract for \$75,000 arcade, 10-12 N. Second St.; 25 shops, each 25x25 ft.; Harker & Cairns, Archts., 123 S. Court St.

Tex., Amarillo—S. H. Kress & Co., 1147 Fifth Ave., New York, plans to start work April 1 on \$100,000, 2- or 3-story and basement, fireproof store, 7th Ave. and Polk St.; terra cotta front.

### Theatres

Ala., Huntsville—Crescent Amusement Co., Tony Sudekum, Pres., 815 Church St., Nashville, Tenn., rebuild Lyric Theater noted burned at loss of \$75,000; Joe Holman, Company Archt.

Mo., Louisiana—Geo. D. Barnett, Archt., Synd. Trust Bldg., St. Louis, soon ready for bids for \$40,000, 3-story and basement, 60x100 ft., brick and rein. conc., fireproof theater, office and apartment building; theater to seat 750; 3 offices and 2 apartments; comp. roof, marble, tile and terra cotta work, steam heat.

Tex., Fort Worth—Majestic Building Co., John R. Griffin, Mgr., Majestic Bldg., reported, plans 8-story, 150x200 ft. combination hotel, office and theater building on site present Majestic Theater, Commerce and 10th Sts.; theater to seat 3300 people; first four floors, 125 offices; other floors, 200 hotel rooms; Charles F. Allen, Archt.

### Warehouses

Ga., Brunswick—Five Storage & Warehouse Co. rebuild structure recently noted burned.

Ga., Brunswick—Independent Transfer Co. plans rebuilding structure recently noted burned.

**Md., Baltimore**—Garvey Bros. (plumbers' supplies), 3204 Frederick Ave., soon ready for bids for 2-story, 30x140 ft., brick warehouse, office and showroom, Frederick Ave. and Ellamont St.

**Okla., Oklahoma City**—Schumacher & Winkler, Archts., Hightower Bldg., prepared plans for \$250,000, 11-story, 100x140 ft., rein. conc., brick and terra cotta, fireproof warehouse and office building near Katy railroad station.

for group of Oklahoma City capitalists; first floor for show rooms; 98 offices; plan to start work in 60 days.

**Tenn., Johnson City**—J. E. Cloninger and associates plan tobacco warehouse.

**Tex., Midland**—International Harvester Co., Harvester Bldg., Chicago, Ill., J. J. Willis, Representative, soon start work on wholesale and retail house.

**Mo., St. Louis**—Chas. Naert, 3222 Meramec St., erect \$10,000 brick residence, 6246 Itaska St.; 2 stories and basement, 35x30 ft., hardwood floors, tile bath, slate roof, hot water heat; work by sub-contract.

**Mo., St. Louis**—Hy Dilschneider Real Estate & Building Co., 7914 Kingsbury Ave., erect \$15,000 brick dwelling, 6067 W. Cabanne Ave.; 2 stories and basement, 33x38 ft., hardwood floors, tile bath, slate roof, hot water heat; plans and constr. by owner.

**Mo., St. Louis**—Building Industries Corp., care Jim Reardon, 831 Arcade Bldg., erect brick residence, 7471 Cromwell Drive, Moorlands; 2 stories and basement, 31x50 ft.; E. E. Christopher, Archt., Louderman Bldg.; work by sub-contract.

**Mo., St. Louis**—Irvan E. Oberbeck, 8545 Concord St., erect 2 brick dwellings, 881-87 Wall St.; 1 story and basement, 23x45 ft., tile baths, comp. shingle roofs, hot air heat; L. J. Graham, Archt., 4233 Ashland Ave.; work by sub-contract.

**Okla., Tulsa**—Seth W. Herndon, Mayo Bldg., \$40,000 residence and garage; 2 stories and basement, 40x120 ft., brick veneer; M. L. McCune, Archt., Kennedy Bldg.; G. D. Morrow & Son, Contrs., 113 E. 18th St.

**Tex., Beaumont**—J. Alexander Marshall, V. Weiss Bldg., let contract to Seymour Construction Co. for \$50,000 Colonial residence, McKee Place; Livesay & Wiedemann, Archts., San Jacinto Life Bldg. 1-1

**Tex., Fort Worth**—O. White let contract to John Kauffman, 3211 Willing St., for \$10,000 residence, 2845 Fifth Ave.; brick veneer, 1 story, 30x52 ft., tile bath, asbestos shingle roof. 1-1

**Tex., San Antonio**—Jos. H. Frost, Fredericksburg Rd., let contract to Mitchell Construction Co. Bldrs. Exch. Bldg., for Spanish type residence; tile and stucco, 2 stories, tile and oak floors, 4 baths, Mission tile roof; John M. Darriott & Associates, Archts.; Lilly & Drought, Engrs., both Frost Natl. Bk. Bldg.; plumbing and heating, Chalkley Bros., 1222 Navarro St. wiring, Thomson Electric Co., 1615 Broadway. See Want Section—Building Material and Equipment. 1-1

**Tex., Weslaco**—W. C. Connelly let contract to J. N. Meeks, Harlingen, for brick and hollow tile residence; 2 stories, 51.6x28 ft., oak floors, rein. conc. foundation, Mission tile roof; Wm. D. Van Sice, Archt., 502 State Natl. Bk. Bldg., Brownsville. See Want Section—Building Material and Equipment. 12-25

## Government and State

**La., Baton Rouge**—Doullut & Ewin, Inc., 901 Q. & C. Bldg., New Orleans, La., has piling and sheet piling contract for foundation for \$5,000,000 State Capitol; Weiss, Dreyfous & Seiferth, Archts., Maison Blanche Bldg., New Orleans; George A. Fuller Co., Contr., Fuller Bldg., New York, and Munsey Bldg., Washington, D. C. 12-13

**Tex., Randolph Field**—Constructing Quartermaster, Capt. A. W. Parker, let contract at \$44,262 to R. E. McKee, 1018 Texas St., El Paso, for 2 enlisted men's club bldgs.; brick, conc., tile stucco, 1 story 54x98 ft., hardwood and linoleum floors, tile roofs, conc. foundations; no materials purchased nor sub-contracts let to date. 1-1

**Va., Portsmouth**—Treasury Dept., Jas. A. Wetmore, Act. Supvg. Archt., Washington, D. C., let contract at \$80,940 to Jones Bros. & Co., Planters Bank Bldg., Wilson, N. C., for post office extension and remodeling. 12-11

**W. Va., Morgantown**—Treasury Dept., Jas. A. Wetmore, Act. Supvg. Archt., Washington, D. C., let contract at \$71,950 to Samuel Plato, 614 W. Walnut St., Louisville, Ky., for semi-fireproof post office extension; brick, conc., cut stone, 1 story and basement, about 75x60 ft., wood floors, conc. foundation, comp. roof; work not started. Address Contr. See Want Section—Building Material and Equipment. 1-1

## Hospitals, Sanitariums, Etc.

**Tenn., Memphis**—United States Veterans Bureau, Arlington Bldg., Washington, D. C., let contract at \$300,000 to Algernon Blair, First Natl. Bk. Bldg., Montgomery, Ala., for nurses' home and additions to main bldg. and laundry, U. S. Veterans' Hospital; conc., brick, tile and stone, 45x200 ft., 4 stories; 37x150 ft., 4 stories; 50x36 ft., 2 stories; linoleum or asphalt tile floors, conc. foundations, comp. and slate roofs. See Want Section—Building Material and Equipment. 11

**Va., Marion**—Southwestern State Hospital completed foundation for brick and stone

# BUILDING CONTRACTS AWARDED

## Bank and Office

**Okla., Tulsa**—Northwestern Terra Cotta Co., 4417 Oleatha St., St. Louis, Mo., has terra cotta contract for \$500,000 addition to Philcade Bldg., for Waite Phillips; struct. steel, Kansas City Structural Steel Co., 21st St. and Metropolitan Ave., Kansas City, Mo.; rein. steel, Capitol Steel & Iron Co., Daniels Bldg., Tulsa; painting, J. R. Carney Corp., 636 E. Seventh St., Oklahoma City, Okla.; Smith & Senter, Archts., Philtower Bldg.; W. R. Grimshaw Co., Contr., Kennedy Bldg., both Tulsa. 12-25

**Tex., Pampa**—Capitol Steel & Iron Co., 1726 S. Agnes St., Oklahoma City, Okla., has contract for 74 tons rein. conc. for Combs-Worley Bldg., for Albert Combs and Mrs. Phoebe A. Worley; W. A. Kaufman, Archt.; O. L. Boynton, Contr., both Pampa. 12-4

## Churches

**Ga., Columbus**—Church of Christ, Scientist, let contract to W. C. Whitaker, 1121 First Ave., for rein. conc., brick and stucco bldg.; 1 story and basement, 76x37 ft., tile and hardwood floors; T. Firth Lockwood, Archt., Murrah Bldg. 12-18

**Mo., St. Louis**—Laclede Steel Co., Arcade Bldg., has contract for 100 tons rein. steel for Shaare Emeth Congregation synagogue; Alfred S. Alschuler, Inc., Archt., Steiger Bldg., Chicago, Ill.; H. J. Elson, Consit. Engr., 208 N. Broadway; McCormick-Combs Construction Co., Contr., Columbia Bldg., both St. Louis. 11-27

## City and County

**Md., Baltimore**—City Board of Awards let contract at \$1,998,000 to George A. Fuller Co., Fuller Bldg., New York, and Munsey Bldg., Washington, D. C., for Enoch Pratt Free Library, Cathedral and Mulberry Sts.; Classic type, buff limestone, 3 stories and basement, 150x292 ft., 3 book stack levels in basement, steel stacks to hold about 1,500,000 volumes; structure, with equipment, cost about \$2,400,000; Clyde N. & Nelson Friz, Archts., Lexington Bldg.; Edw. L. Tilton and Alfred M. Githens, Consit. Archts., both 141 E. 45th St., New York; C. I. Reeder, Mech. Engr., 915 N. Charles St.; Henry Massart, Struct. Engr., 328 N. Charles St., both Baltimore. 12-25

**Tex., New Braunfels**—City let contract to Alfred Henry, New Braunfels, for fire station; struct. clay tile, stucco, conc. frame, 1 story, 37x42 ft., cement and wood floors, tile roof; Jeremiah Schmidt, Archt., New Braunfels; J. W. Beretta Engineers, Inc., Natl. Bk. of Commerce Bldg., San Antonio.

**W. Va., Wheeling**—Wheeling Fire Station Assn. started work on fire station, Edgewood St., and central fire station, 17th St.; brick, steel, tile, 2 stories, 57x50 ft. and 45x105 ft., conc. and bar joist floors, conc. foundation, comp. and tile roofs; E. B. Franzheim, Archt., 1425 Chapline St.; Elm Grove Building Material Co., Elm Grove, gen. contract at \$87,000. See Want Section—Building Material and Equipment. 1-1

## Dwellings

**D. C., Washington**—D. C. Gruver, 927 15th St., N. W., has permit for 14 brick dwellings, 2209-25 and 2301-09 39th St., N. W.; 2 stories; total \$70,000; owner builds. 1-1

**D. C., Washington**—M. E. Robinson, 1415 Manchester Lane, erect brick and frame residence, 1415 Nicholson St.; 2 stories, comp. roof, sheet metal work, tile work; work by sub-contract.

**D. C., Washington**—Southern Construction Co. has permit for 7 dwellings, 301-17 Madison St., N. W.; 2 stories, \$46,000.

**D. C., Washington**—Jas. N. Hughes, 1427 I St., N. W., erect 3 brick dwellings, 506-11 25th Place, N. E.; 2 stories, hardwood floors, tin roofs, hot water heat; total \$15,000; Geo. T. Santmyers, Archt., 925 15th St., N. W.; owner builds by sub-contract.

**D. C., Washington**—Mrs. A. F. Hassan, care Jos. A. Parks, Archt., 1800 E St., N. W., let contract to D. M. Marthinson, 1107 Connecticut Ave., for brick residence, R St., N. W.; 2½ stories, linoleum and hardwood floors, tile baths, slate roof, oil burning equipment. 11-27

**Fla., Coconut Grove, Miami**—Mrs. Ada L. Adams, 1820 Espanola Drive, Coconut Grove, erect \$15,000 rein. conc., conc. block and stucco residence, 1811 Espanola; tile and oak floors, tile and comp. roof, steel sash; R. DeC. Weakley, Archt., E. Flagler St.; Belsham, Jorgensen & Schreffler, Struct. Engrs., Calumet Bldg., both Miami; day labor.

**Fla., Miami Beach**—Clayton S. Cooper, 1673 Michigan Ave., erect \$15,000 residence, 47th St. and North Bay Rd.; Carlos B. Schoeppl and John & Coulton Skinner, Archts., Coral Gables and Miami Beach; M. R. Harrison Construction Co., Contr., 500 N. E. 45th St., Miami.

**Fla., Miami Beach**—Saml. J. Hale, Contr., reported, erect \$30,000 residence.

**Ga., Atlanta**—Lloyd Culpepper, 1302 Woodland Ave., S. E., erect brick veneer residence, 1121 Woodland Ave., S. E.; 1 story, 6 rooms and bath, comp. roof, hot air heat; owner builds.

**Ga., Atlanta**—Chas. T. Nunnally, 104 Mitchell St., N. W., let contract to Chas. Black, Jr., Atlanta Trust Co. Bldg., for \$75,000 residence; hollow tile veneer, frame walls, stucco and stone exterior, 2 stories, 46x82 ft., walnut and oak floors, brick foundation, slate roof; Hentz, Adler & Shutz, Archts., 1330 Candler Bldg.; work not started. 12-11

**Ga., Atlanta**—J. A. Lemmond, 319 Nolan St., erect brick veneer residence, 323 Nolan; 1 story, 5 rooms and bath, comp. roof, hot air heat; owner builds.

**Ga., Atlanta**—Maddox & Tisinger, 730 Candler Bldg., erect brick veneer residence, 1479 Allene St., S. W.; 1 story, wood floors, comp. shingle roof; owner builds.

**La., New Orleans**—Fred R. White, 2212 Nashville St., erect single residence, Newcomb Blvd. and Freret St.; Paul G. Charbonnet, Contr., 830 Union St.

**La., New Orleans**—Phillip Schneller, Contr., 4141 Orleans St., erect dwelling, DeMontluzin St.; ready for bids about Jan. 15 on sheet metal work, tile work, asbestos roofing, orna. iron, etc.

**La., New Orleans**—O'Neill Labaud, Contr., 3336 Annette St., erect single dwelling, Telemachus and Baudin Sts.; sheet metal work, asbestos roofing.

**Md., Baltimore**—Harry L. Dubbelde Co., Gwynns Falls Parkway and Longwood St., considers erecting 6 dwellings, Gwynns Falls Parkway and Longwood St.; English group; brick, stucco, 2 stories; probably take sub-bids about Feb. 15.

**Md., Baltimore**—John A. Payne, Bldr., 3313 Westerwald Ave., erect \$10,000 dwelling, Stoneleigh, after plans by Kenneth C. Miller, 206 E. Lexington St.; frame, 2½ stories, 30x35 ft. 12-25

**Md., Baltimore**—Clifton Construction Co., 823 E. 22nd St., start work in 10 days on conc. block and stucco dwelling, 2913 Rosolin Ave.; 1½ stories, 23x50 ft., pine and hardwood floors, built-up roof; owner builds. See Want Section—Building Material and Equipment. 1-1

**Md., Baltimore**—Chas. A. Kraefle, 3102 Woodhome Ave., erect frame dwelling, 3018 Woodhome; 2 stories, 24x30 ft.; owner builds.

**Md., Chevy Chase, Branch Washington, D. C.**—Geo. T. Gilleland, 6512 Ridgewood Ave., Chevy Chase, erect brick, hollow tile and half-timber residence; 2½ stories, tile baths, 16th St. Corp., Contrs.

**Mo., St. Louis**—Jas. A. Sarles, 4207 Labadie Ave., erect \$10,000 dwelling, 4446 Besse Ave.; brick, 2-stories and basement, 25x34 ft., hardwood floors, tile bath, slate shingle roof, hot water heat; owner builds.



addition after plans by Eubank & Caldwell, Inc., Archts., Boxley Bldg., Roanoke; 3 stories and basement; about \$100,000; constr. work and materials purchased by owner; contract for steel windows, metal doors, grilles, door frames and metal trim let to Roanoke Engineering Sales Co., 515 Second St., S. W., Roanoke, at \$17,500. 7-1

### Hotels and Apartments

Ala., Birmingham—Molton Hotel, J. A. Driver, Fifth Ave., N and 20th St., let contract to Charles Allen, Martin Bldg., for \$16,000 alterations to first floor of hotel, enlarging lobby, etc.; D. C. Whilldin, Archt., 512 N. 21st St.

D. C., Washington—Columbia Construction Co., Investment Bldg., having plans prepared by George T. Santmyers, 925 15th St., N. W., for \$115,000, 3- or 4-story, brick, rein. conc. and hollow tile apartment, Georgia Ave., N. W.; slag roof, steam heat; owner builds.

D. C., Washington—Fred Schnider Co., Rust Bldg., has plans by George T. Santmyers, 925 15th St., N. W., for \$400,000, brick, conc. and hollow tile apartment in N. W. section; limestone trim; owner builds.

D. C., Washington—Earl Carson, 1332 Eye St., N. W., remodel Denver Apartments, 1419 Chapin St.; C. West, Archt.; Geary-Johnson Co., Engr.-Contr., 8222 Georgia Ave., Silver Springs, Md. 12-11

Ga., Decatur—Mrs. M. B. Phillips erect \$10,000 brick veneer apartment; comp. roof, day labor.

Fla., Bonita Springs—America's Playground, Inc. See Fla., Eagle Lake.

Fla., Eagle Lake—America's Playground, Inc., E. Z. Jones, Sr., Pres., probably select following architect, contractor and engineer in connection with development program including 25 to 50-room addition to Eagle Lake Club Hotel and 25-room addition to Bonita Springs Club Hotel; Architect, L. G. Shreffler, 110 Salamancas Ave., Coral Gables; Contractor, J. A. Kidd Construction Co., Masonic Temple Bldg., Jacksonville; Engineers, Shore Line Builders, Liggett Bldg., Jacksonville. 1-1

Mo., St. Louis—Edw. J. Peterson, 7011 Amherst Ave., started work on \$12,000, 2-story and basement, 27x45 ft., brick apartment, 5510 Rosa Ave.; comp. roof, hardwood floors, farm air heat; owner, Archt.-Bldr.

N. C., Raleigh—Carolina Hotel, Hargett and Dawson Sts., has permit for \$50,000, 70-room addition; J. N. Bryan & Son, Contrs., Rogers Bldg.

Tenn., Memphis—W. F. Fay, 191 E. Parkway, South, soon start work on \$12,000, 2-story, brick, 15-apartment, 796 S. Main St.; comp. roof, oak floors; owner, Archt.-Bldr. 12-25

Tex., Dimmitt—N. H. Witte started work again on \$60,000, 2-story, 50x150 ft. hotel; W. B. Howard, Contr. 7-31

Tex., Ore City—J. T. Pierson announced that contract has been awarded for 25-room, brick hotel.

Tex., San Antonio—O. D. Douglass, Majestic Bldg., has permit for \$22,000, 2-story, 80x52 ft., brick veneer, 10-apartment, 127 W. Craig St.; W. A. Sonnen, Contr., 133 Highland St.

Tex., Tyler—Tyler Hotel Co., J. W. Fitzgerald, Pres., let contract to J. O. Everett & Co., 1713½ Live Oak St., Dallas, for \$150,000, 9-story, 65-room addition to Blackstone Hotel; plumbing, Levy Plumbing Co., 2107 N. Howard St., Dallas; electrical, Coker Electric Co., Tyler; D. F. Coburn, Archt., Hurt Bldg., Dallas. 12-4

### Miscellaneous

Md., Bethesda—National Woman's Country Club, Bradley Blvd., started work on annex to clubhouse; 2 stories and basement, 82x27 ft., brick and frame, green shingle roof.

### Schools

D. C., Washington—District Commrs., Roland M. Brennan, Ch. Clk., Engr. Dept., Dist. Bldg., let contract to Graham Construction Co., Washington Bldg., for Charles Young Platoon School, 26th St., between H and K Sts., N. E.; \$200,000, 2 stories, brick; A. L. Harris, Municipal Archt., Dist. Bldg. 12-18

Ky., Calhoun—Bd. of Education soon let contract for 2-story, 140x51 ft., brick and stone high and grade school; built-up roof, wood floors, stone trim, vacuum heat; Harry E. Boyle & Co., Archts., Furniture Bldg., Evansville, Ind.

Md., Hamilton, Baltimore—Public Improvement Comsn., H. J. Leimbach, Supvg. Engr., City Hall, Baltimore, let contract at \$552,000 to Wm. Langhorne & Co., 1900 Parrish St., Philadelphia, and 816 Amer. Bldg., Baltimore, for Northeast Jr. High School; Wm. W. Emmart, Archt., Union Trust Bldg., Baltimore. 1-1

Miss., Scooba—East Mississippi Junior College, P. J. Wallace, Principal, let contract at about \$50,000 to McLemore & McArthur, M. & W. Bldg., Meridian, for 2-story and basement, brick and conc. dormitory; P. J. Krouse, Archt., M. & W. Bldg., Meridian.

Miss., Scooba—Scooba Separate School Dist., W. S. Carter, let contract to McLemore & McArthur, M. & W. Bldg., Meridian, for \$30,000, 1-story, 137x114 ft., brick and hollow tile school; P. J. Krouse, Archt., M. & W. Bldg., Meridian.

Mo., St. Louis—Vandover School Dist. No. 65 Bd. of Directors, Fred W. Krueger, Smizer Mill and Vandover Roads, let contract to Guy Porter, 6261 Odell Ave., for 1-story and basement, brick school.

N. C., Durham—Durham County Bd. of Education, L. H. Barbout, Supt., let contract to Jack Long for \$25,000 school in Hillandale-Shambley Dist.; brick. 12-25

Okla., Hardesty—Bd. of Education, M. B. Crawford, start work early in spring on brick and stone school; W. O. Green, Contr., Okemah; The Huseman Co., Archt., Chickasha.

Tex., Cleburne—Bd. of Education, Emmett Brown, Supt., let contract at \$22,000 to H. D. McCoy for 8-classroom and auditorium, brick school to replace Booker T. Washington High School for Negroes; W. G. Clarkson & Co., Archts., First Natl. Bank Bldg., Fort Worth. 8-7

Tex., Junction—Junction Ind. School Dist., C. A. Schraub, Pres., let contract at \$59,245 to Hill-Combes for 2-story, brick, rein. conc. and stone high school; cement and tile floors; Phelps & DeWees, Archts., Gunter Building; W. E. Simpson Co., Engrs., Milam Bldg., both San Antonio. 12-25

Tex., Presidio—Presidio Ind. School Dist. Trustees, E. Milton Smith, Sec., let contract at \$44,935 to Cunningham & Widmer, Pecos, for 1-story, brick and rein. conc., fireproof high school; W. L. McAtee & Co., Archts., Carter Bldg., Carlsbad, N. Mex. 12-4

Va., Hampton—Truscon Steel Co., Virginia Bond and Mortgage Bldg., Richmond, has contract for steel joists, mesh and wire for \$300,000, 3-story and basement, 144x271 ft., brick Whittier School at Hampton Normal Institute; Harwood Construction Co., Gen. Contr., Law Bldg., Newport News; Warren S. Holmes Co., Archts., Lansing, Mich.; Alexander B. Trowbridge, Const. Archt., Shoreman Bldg., Washington, D. C.; work started on excavation. 12-18

### Stores

Ark., Walnut Ridge—Brewer Hardware Co., Wiltsey Brewer, Mgr., erect 1-story, brick store to replace structure recently burned; comp. roof; owner builds.

Ark., Fort Smith—Mrs. Fannie Cohn, care Will V. Cohn, 820 N. 20th St., let contract to Z. I. Rambo, 619 N. 36th St., to remodel 2-story, 25x140 ft. building, Garrison Ave. and 6th St., for stores; tile and hardwood floors; Haralson & Nelson, Archts., Merchants Bank Bldg.

D. C., Washington—George T. Santmyers, Archt., 925 15th St., N. W., prepared plans for \$20,000, brick store and apartments, N. W. section; slag roof, steam heat; D. J. Dunigan, Tower Bldg., probable Bldr.

D. C., Washington—Mrs. L. Simon, care of J. H. Simon, Woodley Park Tower, erect 1-story, 41x48 ft., limestone store, 2620 Connecticut Ave., N. E.; N. F. Baessell, Contr., 3621 Newark St., Chevy Chase; David Stern, Archt., 1412 Eye St.; Sanitary Grocery Co., Lessee, 1845 4th St., N. E. See Want Section—Building Material and Equipment.

Ga., Atlanta—Moe Goldman, care J. H. Ewing & Son, 79 Forsyth St., N. W., plans 6-unit brick store on Oxford Road, N. E.; tar and gravel roof; owner probably build by day labor.

Ga., Atlanta—Regan Jones let contract to United Construction Co., Georgia Savings Bank Bldg., for \$10,000, 1-story, brick and steel store, 1011 Peachtree St., N. E.; comp. roof, wood floors.

Mo., St. Louis—Phillip Brenner, 3018 Victor St., erect addition and remodel store and apartment, 3280-84 Gravois Ave.; 2 stories and basement, 41x21 ft., brick, cut stone, terra cotta, comp. gravel roof, wood floors; N. E. Marx & Co., Contrs., 4246 Natural Bridge; Adolph F. & Arthur Stauder, Archts., South Side Natl. Bank Bldg.

Tenn., Chattanooga—J. M. Allen & Co., Chamberlain Bldg., have contract at about \$30,000 for additions to building in Alton Park for Crane Enamel Co.; one story, 131x50 ft. and 60x20 ft., brick and struc. steel, comp. roof; plans by Wm. Jerome Clark, Engr., care Crane Co., 836 S. Michigan Blvd., Chicago.

Tenn., Memphis—Speedway Drug Co., T. E. Folis, 1013 Jackson St., reported, let contract to J. T. Phillips, 1937 Herbert Ave., for 1-story, 50x50 ft., brick store, Claybrook and Jackson Sts.; W. C. Lester, Archt., Dermon Bldg. 12-25

Tex., San Antonio—Schulte-United, Inc., Geo. A. Young, Sr., Asst. V-P., 485 Fifth Ave., New York, let contract at \$15,722 to T. B. Hubbard, 1507 Shepherd St., Houston, for remodeling building, Houston and N. Presa Sts.; private plans. 12-25

### Warehouses

Ga., Atlanta—Straiton Hard, 289½ Peachtree St., N. E., has contract for alterations to warehouse and building mezzanine at Greenwood Ave. and R. R., for Frigidaire Sales Corp., 252 Peachtree St., N. E.

## Trade Literature

**Deep Well Pumps.**—A publication issued by the Worthington Pump and Machinery Corporation, New York, is devoted to Axiflo, Hiflo and Coniflo pumps for deep well, sump and irrigation service. Various models of these pumps are described, with illustrations showing the application of the pumping units and parts to different classes of work.

**Non-Clogging Pumps.**—The Chicago Pump Co., Chicago, Ill., has issued bulletin 128 illustrating and describing non-clogging pumps of heavy duty, screenless and enclosed shaft type, for handling sewage and drainage in buildings and for use in municipal sewage disposal plants and industries. Single and duplex units are shown and improvements and advances in design are treated in detail.

**Memoranda Book.**—An attractive leather-bound memoranda and address book of vest pocket size has been issued by the American Bridge Company, a subsidiary of the United States Steel Corporation, New York. In addition to space assigned to addresses and memoranda, the book carries illustrations of bridges, buildings and other construction in which American Bridge products were used, together with tables showing the population of principal cities, postal rates, six per cent interest table, rules for computing interest and other information.

**Heat Reclaimer.**—The Fuel Economy Co., Inc., Richmond, Va., has issued a circular devoted to the Feco heat reclaimer for laundries, hosiery mills, textile plants, etc. By this device, heat units are transferred from waste water or solutions into incoming cold water as it enters the plant, raising its temperature, saving heat units otherwise wasted and cutting down the load on the boilers.

### Standard for Machine Pins

A proposed American standard for machine pins of the cylindrical and taper types has been prepared by a technical committee of the American Standards Association, New York, and copies of the proposal are being circulated for review and criticism. The committee, under the joint sponsorship of the American Society of Mechanical Engineers and the Society of Automotive Engineers, made a study of both foreign and domestic standards before submitting the proposal.

(Continued on page 84)

# WANT SECTION

## THE CLASSIFICATIONS IN THIS SECTION ARE:

### Machinery and Supplies

Under this heading are reported requests for data, prices and literature and information on machinery, supplies and miscellaneous materials of a wide variety.

Items in this department are published without charge and these columns are open for the publication of wants of all kinds relating to construction work, machinery, materials and supplies.

### Building Materials and Equipment

This division comprises all classes and kinds of materials and equipment used in building and construction projects of every kind.

### Bids Asked

Includes bids asked by U. S. Government, States, districts, municipalities, firms and individuals for machinery, materials, supplies and construction work.

### Machinery and Supplies

**Boilers (Steam).**—Andrew A. Bato (Consult. Engr., 339 N. Grove St., East Orange, N. J.)—Wants prices and data on 2 steam boilers, one 150-lb. pressure, for fuel oil; other 250 lb. pressure, for fuel oil; both 400 h. p., with headroom, including piping and breeching, 19 ft. or less.

**Culvert Curving Machine, etc.**—Lombard Iron Works & Supply Co. (Mchy. Dealer), 631 11th St., Augusta, Ga.—Wants prices and data on corrugated culvert curving machine for making 8-in. and larger culvert pipe of 12 gauge and lighter material, and corrugated culvert stake punch and riveter, 32-in. stake.

**Elevator.**—B. M. Janney, Pres., Roaring Springs Lime Co., Gloucester, Va.—Wants prices and data on elevator (preferably used) to raise 300 to 500 lb. 12 ft.; with electric motor, geared to travel very slowly, or well balanced without motor; for taking invalid to second floor without attendant.

**Engine (Steam) and Boiler.**—J. H. Black, Barboursville, Ky.—Wants prices and data on 15 or 20-h. p., high pressure steam engine and boiler, on wheels; first class condition.

**Engine and Boiler.**—P. H. Williams, 444-448 Pine St., Macon, Ga.—Wants prices on used 20-h. p. steam engine and 25-h. p. boiler, preferably slab-burning, mounted; delivery Williston, Fla.

**Flour and Corn Meal Machinery.**—Axton Roller Mills, J. S. Mitchell, Prop., Axton, Va.—Wants complete flour and corn meal machinery, capacity of flour machinery must be from 75 to 125 bbls.

**Newspaper Folding Machine.**—Sanford Herald, Sanford, N. C.—Wants data and prices on folding machine for newspaper; state condition.

**Tractor (Crawler).**—R. P. Johnson (Mchy. Dealer), Wytheville, Va.—Wants prices and data on used 10-ton, crawler type tractor, preferably Holt, good condition.

**M. E. S. Posey, 18th St. and Carter Ave., Ashland, Ky.,** wants following for filling station:

- (1) Air Compressor and Tank
- (2) Air Stand
- (3) Grease Rack
- (4) Oil Tanks or Containers
- (5) Pumps
- (6) Tanks—two 1000 gal. and two 500 gal. and equipment for greasing cars.

### Miscellaneous

**Headlight (Automobile).**—Dr. Henry J. Godin, 956 Broad Street, Augusta, Ga.—Wants prices and data from firms in position to make few working models of newly patented automobile headlight.

**Ice Skating Rinks.**—Harold Carlock, Johnson City, Tenn.—Wants prices and data from manufacturers of ice skating rinks.

**Boxes (Pasteboard).**—Field & Gardens, Route 1, Mountaingrove, Mo.—Wants prices and data on one and two-gal. pasteboard boxes for shipping purposes.

**Heater (Hot Air) and Grill.**—N. F. Baessell, 3621 Newark St., Washington, D. C.—Wants prices and data on hot air heater and grill.

**Jelly Containers (Glass).**—Rice's Blueberry Nurseries, Inc., Crestview, Fla.—Wants prices and data on large lots jelly glasses.

**Wheels (Toy).**—R. N. Norman, 221 College St., Dyersburg, Tenn.—Wants prices and data from manufacturers of small wheels of metal, composition, wood, etc., for toys.

### Building Material and Equipment

**Clifton Construction Co., 823 E. 22nd St., Baltimore, Md.,** wants prices on following for dwellings:

- Concrete Blocks
- Flooring—hardwood
- Plaster Board
- Roofing (flat)—built-up
- Steel Sash.

**A. Ten Eyck Brown, Archt., Forsyth Bldg., Atlanta, Ga.,** wants prices on following for \$1,500,000 post office and Federal Bldg:

- Electric Refrigerators
- Elevators
- Flooring—hardwood, linoleum, terrazzo, tile, composition
- Incinerator
- Limestone
- Mail Chutes
- Marble
- Metal Doors
- Roofing (flat and hip)—built-up, tile
- Steel Sash and Trim
- Tile—hollow
- Terra Cotta Trim
- Ventilators
- Wire Glass
- Bronze and Bronze Work.

**Algernon Blair, First Natl. Bk. Bldg., Montgomery, Ala.,** wants prices on following for nurses' home and additions to main bldg. and laundry: (\$300,000), U. S. Veterans Hospital, Memphis, Tenn.:

- Flooring—linoleum, composition
- Limestone
- Marble
- Metal Doors
- Roofing—built-up, slate
- Tile—hollow.

**Elm Grove Building Material Co., Elm Grove, Wheeling, W. Va.,** wants prices on following for 2 fire stations, \$87,000:

- Cast Stone
- Flooring—terrazzo, tile, composition
- Limestone
- Metal Doors
- Tile—hollow.

**J. Herbert Johnson, Contr., Silver Spring, Md.,** wants prices on following for school, Woodside, Md.:

- Roofing—asbestos and asphalt shingle
- Wire Glass.

**J. M. Colley, Archt., Eighth and Chestnut Sts., Louisville, Ky.,** wants prices on following for \$275,000 school:

- Flooring—hardwood, terrazzo
- Limestone
- Marble
- Roofing (flat)—built-up, tile
- Steel

**Mitchell Construction Co., 311 Builders Exchange Bldg., San Antonio, Tex.,** wants prices on following for \$50,000 dwelling:

- Flooring—hardwood.

**Nelson & Cooper, Archts., 120½ S. Salisbury St., Raleigh, N. C.,** want prices on following for \$15,000 dwelling:

- Cast Stone
- Flooring—hardwood, rubber tile, tile
- Incinerator
- Marble
- Roofing (hip)—slate

**N. F. Baessell, Contr., 3621 Newark St., Washington, D. C.,** wants prices on following for \$18,000 store:

- Flooring—hardwood
- Limestone
- Marble
- Metal Ceilings
- Tile—interior
- Ventilators
- Wire Glass
- Brass and Bronze Work

**Samuel Plato, Contr., 615 W. Walnut St., Louisville, Ky.,** wants prices on following for \$72,000 post office extension, Morgantown, W. Va.:

- Flooring—terrazzo
- Limestone
- Marble
- Roofing—built-up
- Tile—hollow
- Wire Glass
- Brass and Bronze Work.

**Theo. S. Maffitt, Archt., 510 N. Sycamore St., Palestine, Tex.,** wants prices on following for \$25,000 school:

- Cast Stone
- Metal Ceilings
- Roofing—tile.

**W. D. Van Sclen, Archt., 502 State Natl. Bk. Bldg., Brownsville, Tex.,** wants prices on following for dwelling, Weslaco, Tex.:

- Flooring—tile
- Roofing—tile.

**W. T. Nolan, Archt., Canal Bank Bldg., New Orleans, La.,** wants prices on following for \$65,000 city hall-auditorium, Crowley, La.:

- Cast Stone
- Flooring—hardwood, terrazzo, tile
- Marble
- Metal Doors
- Roofing—built-up, tile
- Steel Sash and Trim
- Tile—interior
- Wire Glass
- Brass and Bronze Work.

### Bids Asked

**Bridge.**—Maryland. See Construction News—Bridges, Culverts and Viaducts.

**Buffer (Bench).**—See Miscellaneous Machinery, etc.

**Bulkhead.**—U. S. Engr. Office, Wilmington, Del.—Bids Jan. 30 for constructing approx. 130 lin. ft. bulkhead, Chesapeake and Delaware Canal, Chesapeake City, Md.

**Coil Winding Machines.**—See Miscellaneous Machinery, etc.

**Crank Shaper.**—See Miscellaneous Machinery, etc.

**Cutting Machine.**—See Miscellaneous Machinery, etc.

**Dikes.**—U. S. Engr. Office, Postal Telegraph Bldg., Kansas City, Mo.—Bids Jan. 15 for constructing 8970 lin. ft. standard pile clump dikes, Missouri River, Murrays Bend, Jefferson City, Mo.

**Dredging.**—U. S. Engr. Office, Jacksonville, Fla.—Bids Jan. 22 for dredging approx. 502,000 cu. yd. other than rock and 75,000 cu. yd. rock, Sparkman Channel, Tampa Harbor, Fla.

**Dredging.**—U. S. Engr. Office, Mobile, Ala.—Bids Jan. 29 for dredging in Mobile River Channel. See Construction News—Drainage, Dredging and Irrigation.

**Dredging.**—U. S. Engr. Office, Jacksonville, Fla.—Bids Jan. 29 for dredging approx. 31,000 cu. yd., place measurement, channel of approach to municipal pier and turning basin, Punta Gorda, Charlotte Harbor, Fla.

**Dredging.**—U. S. Engr. Office, Mobile, Ala.—Bids Jan. 26 for dredging in Channel connecting Mobile Bay and Mississippi Sound and in Mobile Bay to New Orleans Intracoastal Waterway Channel.

**Dredging.**—U. S. Engr. Office, Jacksonville, Fla.—Bids Jan. 15 for dredging approx. 325,000 cu. yd., St. Petersburg, Fla. See Construction News—Drainage, Dredging and Irrigation.

**Dredging.**—U. S. Engr. Office, Galveston, Tex.—Bids Jan. 20 for dredging channel, Aransas Pass to Corpus Christi.

**Dredging.**—U. S. Engr. Office, Jacksonville, opens bids Jan. 26 for dredging approx. 137,000 cu. yd. material other than rock and 274,000 cu. yd. rock, turning basin of Miami Harbor, Fla.

**Dredging.**—U. S. Engr. Office, Montgomery, Ala.—Bids Jan. 19 for dredging channel Choctawatchee Bay, towards East Pass.

**Dredging.**—U. S. Engr. Office, Charleston, S. C.—Bids Jan. 14 for dredging approx. 16,588 cu. yd., Waccamaw River, S. C.

**Dredging.**—U. S. Engr. Office, Charleston, S. C.—Bids Jan. 14 for dredging approx. 88,000 cu. yd., Shipyard River, Charleston Harbor, S. C.

**Drills.**—See Miscellaneous Machinery, etc.

**Levee.**—U. S. Engr. Office, McCall Bldg., Memphis, Tenn.—Bids Jan. 13 for 860,000 cu. yd. earthwork, Lower St. Francis Levee Dist., Mo. See Construction News—Miscellaneous Construction.

**Furniture.**—Comms., District of Columbia, Washington, D. C.—Bids Jan. 19 for 25 suites furniture, 17 dining room tables for Gallinger Hospital.



**Envelopes.**—Joint Committee on Printing in Capitol, Washington, D. C.—Bids Jan. 26 for envelopes required for one year, including approx. 42,375,000 kraft, 7,705,000 white and colored sulphite writing, 115,000 white and colored fine writing, 510,000 white leader, 1,355,000 50% rag white bond and 170,000 100% rag white bond.

**Fence Supplies.**—Quartermaster, Wm. Beaumont General Hospital, El Paso, Tex.—Bids Jan. 20 for 9800 lin. ft. chain link fence, 93 posts, 800 lin. ft. fence fabric, 30 bars, 120 tension bands and bolts, 75 lb. galv. wire, staples and 5 fence stretchers.

**Hypochlorite of Lime.**—Bd. of Awards, Office of City Register, City Hall, Baltimore, Md.—Bids Jan. 14 for hypochlorite of lime to Bureau of Water Supply.

**Knife Grinder.**—See Miscellaneous Machinery, etc.

**Knobs.**—U. S. Coast Guard Headquarters, Washington, D. C.—Bids Jan. 19 for 100 receiver knobs.

**Lathe (Buffer and Polishing).**—See Miscellaneous Machinery, etc.

**Lathe (Turret).**—See Miscellaneous Machinery, etc.

**Lockers.**—Quartermaster Supply Officer, Washington, D. C.—Bids Jan. 29 for wall lockers.

**Lumber.**—Commanding Officer, Aberdeen Proving Ground, Aberdeen, Md.—Bids Jan. 12 for 4 carloads Sitka spruce, each car to contain  $\frac{1}{2}$  c. 1. 16 ft. long,  $\frac{1}{4}$  c. 1. 14 ft. long and  $\frac{1}{4}$  c. 1. 12 ft. long.

**Milling Machine.**—Bureau of Supplies and Accounts, Navy Dept., Washington, D. C.—Bids Jan. 20 for motor driven heavy duty plain vertical milling machine.

**Milling Machine, etc.**—See Miscellaneous Machinery, etc.

**Miscellaneous.**—Bureau of Supplies and Accounts, Navy Dept., Washington, D. C.—Bids Jan. 13 for roofing, tin, saws, clamps, reamers to Navy Yard, Washington.

**Miscellaneous Machinery, etc.**—Bureau of Supplies and Accounts, Navy Dept., Washington, D. C.—Bids Jan. 20 for motor driven oxygen type cutting machine, motor driven crank shaper; bids Jan. 27 for motor driven buffer and polishing lathe and motor driven bench buffer, motor driven bench type coil winding machine and motor driven bench sensitive drills.

**Miscellaneous Machinery, etc.**—Bureau of Supplies and Accounts, Navy Dept., Washington, D. C.—Bids Jan. 13 for motor driven automatic knife grinder; bids Jan. 20 for motor driven plain milling machine with attachments, motor driven brass geared head universal turret lathe and motor driven vertical shaper.

**Paper.**—U. S. Government Printing Office, Joint Committee on Printing, Capitol, Washington, D. C.—Bids Jan. 26 for paper for public printing and binding, blank paper and plain envelopes for government departments and establishments in District of Columbia.

**Pipe (Well).**—Bd. of Water Comms., 105 N. Second St., Memphis, Tenn.—Bids Jan. 21 for furnishing, f.o.b. Auction Ave. warehouse, freight prepaid; 750 ft. of 14-in. O. D. pipe  $\frac{1}{2}$ -in. thick to be coupled and threaded; 2500 ft. of 10-in. 35-lb. pipe with recessed couplings and threaded.

**Roads.**—State of Arkansas—Bids for 4 roads. See Construction News—Roads, Streets and Paving.

**Roads.**—State Highway Dept., Dover, Del.—Bids Jan. 27 for roads: Cont. 168, Little Creek-Bay road, 4.119 mi., including 17,000 cu. yd. excavation, 3000 cu. yd. borrow, 4230 cu. yd. cement conc. paving; Cont. 175, Fleming's Corner-Whiteleysburg, 7.909 mi., 20,000 cu. yd. excavation and borrow, 24,000 lb. reinforcement, 8150 cu. yd. cement conc. paving; Cont. 179, Double Bridges-Redden, 5.458 mi., 15,000 cu. yd. excavation and borrow, 5625 cu. yd. cement paving, 8000 lb. reinforcement, 22,000 lb. struc. steel; Cont. 182, Fieldsboro-Odesa, dual highway grading, 2.623 mi., 115,000 cu. yd. excavation and borrow, 22,500 lb. reinforcement; Cont. 182A, Odesa-Drawyers, fill and small structures, 1.797 mi., 140,000 cu. yd. excavation and borrow.

**Sewers.**—City, T. M. Wilkins, City Clk., Prichard, Ala.—Bids Jan. 20 for 4695 lin. ft. storm sewers and appurtenances and 7365 lin. ft. sanitary sewers. See Construction News—Roads, Streets and Paving.

**Sewer Construction.**—Bd. of Public Works, St. Louis, Mo.—Bids Jan. 13 for construction of Section J, River des Peres drainage works; information on application.

**Shaper (Vertical).**—See Miscellaneous Machinery, etc.

**Streets.**—See Construction News—Roads, Streets and Paving.

**Streets.**—Birmingham, Ala. See Construction News—Roads, Streets and Paving.

**Tractor Plow.**—Marine Corps, Q. M. Dept., Washington, D. C.—Bids Jan. 13 for tractor plow, delivery Quantico, Va.

**Trolley, etc.**—Comms., District of Columbia, Washington, D. C.—Bids Jan. 15 for 2000-lb. capacity trolley, 2000-lb. capacity block, 10,000-lb. capacity trolley and 10,000-lb. capacity block.

(Continued from page 82)

**Form Turning Lathes.**—Monarch-Keller automatic form turning lathes, manufactured by the Monarch Machine Tool Co., Sidney, Ohio, are illustrated and described in a booklet issued by the company. The lathes, shown in various applications, are designed for rapid and economical production of die casting dies, glass bottle moulds, can forming dies, lens grinding dies, spinning chucks, punches and dies for hollow ware, etc.

**Cotton Manufacturing.**—One of the most comprehensive analyses of the American cotton manufacturing situation has been made by Claudius T. Murchison, Professor of Applied Economics, University of North Carolina, in his book "King Cotton Is Sick." While there have been some minor changes as to operating methods since the book was completed some months ago, on the whole it is an important contribution to the subject of cotton manufacturing.

The cotton industry operates under a complex system of individual unit manufacturing procedure. From the yarn producer to the ultimate sale of the finished goods to the

retailer the product must go through many separate channels, spinner to weaver to converter to distributor. Each unit in the main is dependent upon buyers in the next steps in the manufacturing progress for guidance as to quantity and nature of product which is often subject to the vagaries of style demand in textiles.

Professor Murchison, reviewing in detail the complex setup in the manufacture of cotton, points out obstacles in the way of reform and offers a solution of the problems faced by the manufacturer. In the final analysis he sees a way out for the industry through consolidations of scattered units, stressing the vertical merger principle combining units of spinning and each successive step in the manufacturing process, rather than the horizontal type of merger of units of like manufacturing processes, as a key to the relief which is sought from the unsettled condition. Of course, the general question of mergers, which seems uppermost in the minds of business men, is debated seriously as a destroyer of individual initiative. As to the cotton industry, the point is that some progress has been made toward the consolidation of existing mills. There are many groups of mills now operating under one control and other consolidations have been quietly taking place in recent months. Any solution that would bring about a more stable condition for the manufacturer should offer greater stabilization to the raw material market, and thus the cotton growers of the South would benefit.

"King Cotton Is Sick" is a 190-page book, cloth bound, published by the University of North Carolina Press, Chapel Hill, and sells for \$2.00 a copy.

## INDUSTRIAL NEWS OF INTEREST

Items of news about industrial, railroad or financial interests, building operations, construction work, municipal improvements, or the sale of machinery or the letting of contracts in the South or Southwest, are invited from our readers, whether they are advertisers, or subscribers, or not. We invite information of this character from readers in the North and West about their Southern business operations, as well as from Southern readers. News of value will be published just as readily when from non-advertisers as from advertisers.

### Power Company Statements

Gross earnings of the Alabama Power Company for November, 1930, amounted to \$1,544,057 as compared with \$1,569,368 for the corresponding month last year, while gross income amounted to \$923,375 as against \$1,025,207. For the 12 months ended November 30, 1930, gross earnings amounted to \$17,983,960 as compared with \$18,311,508 for the 12 months ended November 30, 1929, and net income to \$6,300,313 as compared with \$7,202,702.

The Georgia Power Company had gross earnings for November, 1930, of \$2,240,764 as compared with \$1,947,896 for the corresponding month last year, and gross income of \$1,181,660 as compared with \$1,192,307. Gross earnings for the 12 months ended November 30, 1930, amounted to \$24,653,684 as compared with \$23,668,748 for the year ended November 30, 1929, and net income to \$8,090,805 as compared with \$8,470,442.

Gross earnings of the Tennessee Electric Power Company amounted to \$1,207,814 for November, 1930, a decrease of \$180,039 as compared with November, 1929, and gross income to \$590,437 as compared with \$719,915 for November, 1929. For the 12 months ended November 30, 1930, gross earnings were \$14,983,472 as compared with \$14,552,073 for the corresponding period ended November 30, 1929, while net income amounted to \$4,966,700 as compared with \$4,938,452. All these companies and subsidiaries belong to the Commonwealth & Southern Corporation System.

### Army Ordnance Association

Theodore Swann, chemical manufacturer of Birmingham, Ala., and president of the Swann Corporation, has been named president of the Birmingham Post of the Army Ordnance Association. Other Birmingham Post officers elected were: George Morrow, vice president; Lieut. D. N. Hausman, secretary, and R. E. Parker, treasurer.

### Absorbent Cotton Container

Absorbent cotton in a new, convenient package for the consumer is now marketed in "The Cotton Picker," introduced by the Kendall Company division of Bauer & Black, Chicago. The cotton is coiled into a loosely formed rope into a cylindrical container and fed through a small hole in the end of it, allowing the cotton to be plucked off as needed without exposing the rest of the contents.

### Westinghouse Supply Office

The Westinghouse Electric Supply Company, Philadelphia, Pa., announces the opening of an office at 5th and Byrd Streets, Richmond, Va., with C. W. Dustin as manager. This office and warehouse will carry a complete stock of Westinghouse appliances, radio, refrigerators and supplies for distribution throughout Virginia and Eastern North Carolina.

(Continued on page 86)

# LEADITE

Trade Mark Registered U.S. Pat. Office

*Nationally Used*

## "A few Pressure Reports from Users of LEADITE"

Users of Leadite	Normal Pressure Pounds per Square Inch	Test Pressure Pounds per Square Inch
ST. LOUIS, Missouri .....	Not given	1400
CRUMLEY, JONES & CRUMLEY CO. ....	40-250	Not given
PENNSYLVANIA WATER COMPANY, Wilksburgh, Pa..	220 (max.)	" "
OKLAHOMA CITY, Okla. ....	80	150
BERWYN, Illinois .....	30	110-150
FLINT, Michigan .....	73	150
DAYTON, Ohio .....	120-135	Not given
TULSA, Oklahoma .....	45-125	" "
INDIANAPOLIS, Indiana .....	60-100	" "
NEW BEDFORD, Mass. ....	20- 90	" "
LOUISVILLE, Kentucky .....	90	" "
ST. LOUIS, Missouri .....	65	" "
PHILADELPHIA SUB'N WATER CO. ....	60	" "
ATLANTIC CITY WATER DEPT. ....	40	" "

THE LEADITE COMPANY  
Land Title Building - Philadelphia, Pa.



## No Caulking





(Continued from page 84)

**Reading Iron Company Appointments**

The Reading Iron Company, Reading, Pa., has named James K. Aimer as assistant general manager of sales in charge of railroad, locomotive and car equipment sales, also bar iron and billet sales, with offices at 230 Park avenue, New York. In addition to supervision of sales to railroads, Mr. Aimer will supervise sales of Reading charcoal iron boiler tubes, formerly under supervision of G. H. Woodroffe, metallurgical engineer, who will now handle complaints and serve in a technical advisory capacity to the general sales organization.

**Construction Outlook Good**

According to Lou R. Crandall, president of the George A. Fuller Company, New York, contracts for building construction signed during the first two and a half months of the last quarter of 1930 and totaling \$17,540,000, will enable the company to enter 1931 with a volume of unfinished business about as large or slightly larger than that on December 30, 1929. On January 1, 1930, unfilled orders amounted to \$35,470,000 and on June 30, 1930, the total of unfinished business on the company's books amounted to \$32,000,000. "Our predictions, naturally based on our company's present outlook for a better than average new year," says Mr. Crandall, "are that if the plans for hastening the many federal, state and municipal building projects materialize, the construction industry, as applied particularly to the larger major projects, will experience a very fair year's business during 1931."

**Kansas City Building Activities****Extensive**

Kansas City, Mo.—Major items of construction now under way or definitely projected in Kansas City and immediate vicinity include the Kansas City Power & Light building to cost \$2,500,000; Fidelity Bank building, \$2,800,000, on which steel work will soon start; \$750,000 addition to Dierks Building completed; 26-story Bryant Tower, \$2,000,000; William Rockhill Nelson Gallery of Art and Atkins Museum of Fine Arts, \$2,750,000; terminal postoffice, \$4,500,000, approaches started; Missouri Pacific elevator, \$2,500,000; 12-story addition to former New England Bank Building; oil terminal on Fairfax River, \$1,500,000; initial unit of Southwestern Bell Telephone building, \$1,000,000; two units of Walnuts Apartments; \$830,000 Jewish Memorial Hospital; 7-story unit of Independence Sanitarium and Hospital; Corn Products refinery expansion, \$250,000; Crooks terminal warehouse unit, \$300,000; 20-story Phillips Hotel; Forest Hill Abbey mausoleum; St. John's Catholic Seminary under way, \$400,000; six school buildings and enlargements, \$5,000,000; \$300,000 East

**Engineering and Contracting**

The Lummus Company, a new engineering and contracting firm, has been organized with an authorized capital stock to take over the business of the Walter E. Lummus Company, Boston, Mass. The Superheater Company and the Babcock & Wilcox Company, of New York, are largely interested in the new firm which will engage in the design and manufacture of distillation and refining equipment for the alcohol, chemical and petroleum industries.

**Orders Demand Increased Production**

Orders for V-belts for delivery in January and February, recently booked by L. H. Gilmer Co., Tacony, Philadelphia, necessitate an immediate increase in production by the addition of a full night shift to operate all machinery to capacity. Orders exceed similar orders a year ago by 25 per cent. The company manufactures rubber and fabric V-belts both for automobiles and for industrial multiple V-belt drives, together with automotive specialties and a general line of webbing.

**Heads Oliver Farm Equipment Company**

J. D. Oliver, chairman of the board of the Oliver Farm Equipment Company, Chicago, announces the election of C. R. Messinger, president of the Chain Belt Company, Milwaukee, as president of the Oliver company, and Mr. Messinger and W. C. Frye, Milwaukee, have been elected to the board of directors. The Oliver organization was formed last year as a merger of the Oliver Chilled Plow Works, the Hart-Parr Company, the American Seeding Company and the Nichols & Shepard Company.

Side telephone exchange to house \$1,000,000 worth of equipment; Latter Day Saints auditorium in Independence, and \$1,300,000 addition to municipal power and light plant in Kansas City, Kans.

**Tin Mill Increases Production**

Morgantown, W. Va.—The Sabraton mill here of the American Sheet and Tin Plate Company, subsidiary of the United States Steel Corporation, will increase production at once from 37 per cent to 50 per cent of capacity. While the mill force will not be increased, more work will be provided for the force of 650 men already employed.

**280 Railway Men Resume Work**

Roanoke, Va.—Officials of the Norfolk & Western Railway Company announce that 280 shopmen of this city and vicinity who were laid off December 18 resumed work January 5. Maintenance-of-way employees who were affected by the retrenchment will return to their work on January 12.

**\$2,500,000 RAIL ORDER****L. & N. Railroad Orders 60,000 Tons**

Birmingham, Ala.—Orders of 50,750 tons of steel rails and 10,000 tons of rail fastenings have been placed by the Louisville & Nashville Railroad Company with the Tennessee Coal, Iron & Railroad Co., for delivery to begin in January. The order is regarded as sufficient to keep the mills in continuous operation for approximately 60 days, the rails to be rolled at the Ensley plant and the rail fastenings to be produced at Fairfield. With smaller orders calling for approximately 100,000 tons of rails on which delivery has not yet started, this new order with others expected, will provide work for the mills for an indefinite period. The coming of these orders to the Birmingham district, representing an outlay of \$2,500,000, is encouraging and significant, following a recent upswing of pipe production. The work of the rail mill will directly affect from 1000 to 1500 employees. An order for 20,000 tons of rails was recently placed by the Louisville & Nashville with the Illinois Steel Co., the rails to be rolled at Gary, Ind.

**\$5,000,000 South Carolina Roads**

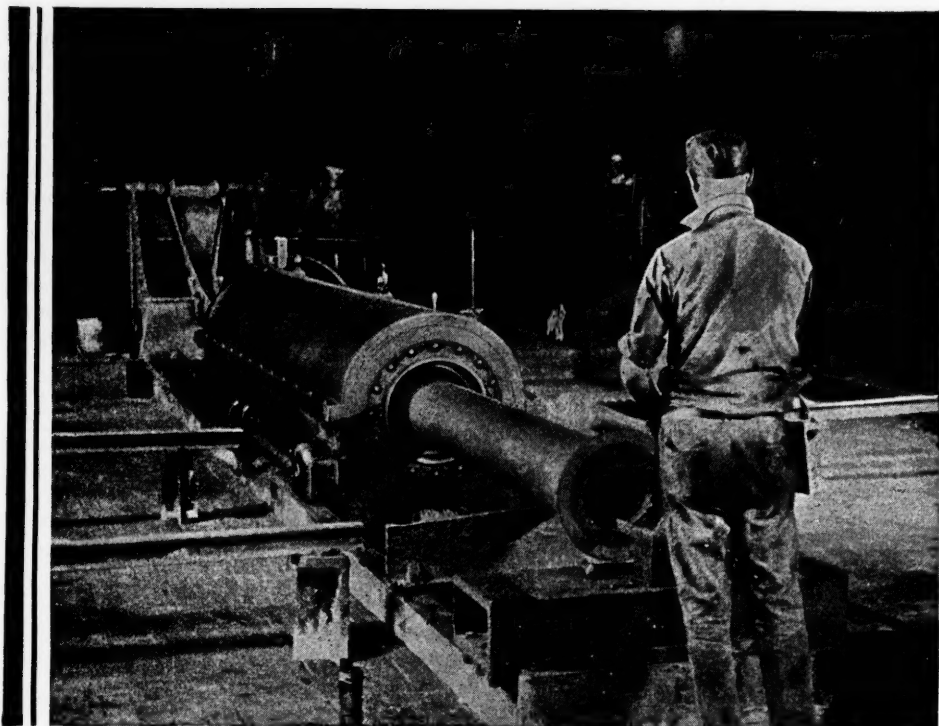
Columbia, S. C.—Bids have been opened by the South Carolina Highway Commission on 16 road projects embracing a total of nearly 200 miles of paving, and on 11 bridge projects, for all of which contracts are expected to be awarded this month. The projects, which will cost \$5,000,000, are located in 20 counties.

**Plant Employs 300**

Danville, Va.—The redrying plant and stemmery of the R. J. Reynolds Tobacco Co. have reopened with a force of approximately 300 operatives. It is understood that several million pounds of green tobacco from the Burley fields are being shipped here to be re-ordered and prized, an operation requiring several months.

**\$5,000,000 Power Program**

Birmingham, Ala.—The Alabama Power Co., has announced an initial program for extension of its facilities during 1931, estimated to cost \$5,000,000. An operating budget of \$5,000,000 has also been announced.



The illustration shows the deLavaud machine withdrawing to permit the removal of a newly formed pipe.

## Why deLavaud pipe is superior in strength and flexibility

**W**HY is deLavaud pipe the strongest cast iron pipe known? The answer can be found in the deLavaud machine shown above.

If you looked into the bore of this machine in operation, you would observe an accurately gauged metal mold revolving within a water-cooled jacket. When molten iron is fed into this rapidly whirling mold, it is held against the sides by centrifugal force—a force forty times greater than gravity. Gas bubbles and impurities are driven out of the metal. At the same time, the cooling action of the water jacket which encases the mold brings about a fine, even division of the iron particles.

Thus, upon close examination, you

would find that deLavaud pipe metal is dense and fine-grained, free from gas bubbles and weakening impurities.

After coming from the machines, deLavaud pipe is uniformly annealed in a special annealing furnace. Here controlled heat further improves the structure of the metal, bringing about deLavaud pipe's flexibility and eliminating any possibility of casting strains.

In addition to making deLavaud pipe in accordance with U. S. government specifications, we are also furnishing this product in the various thicknesses and weights shown in the specifications of the American Water Works Association and the American Gas Association. Write for complete information.

# United States Pipe and Foundry Co., Burlington, N.J.

**Sales Offices:**  
New York

Philadelphia  
Pittsburgh

Cleveland  
Buffalo  
Chicago

Our pipe bears the "Q-Check"  
trademark of The Cast Iron  
Pipe Research Association

Dallas  
Birmingham  
Kansas City

Minneapolis  
Seattle

San Francisco  
Los Angeles



# The Lumber Industry

By O. N. CLOUD,  
Secretary-Manager,  
Long Leaf Yellow Pine, Inc., New Orleans

**A**N analysis of the lumber industry present and prospective is presented in the following:

The suspension or curtailment that occurred in all divisions of the construction industry in which lumber is used resulted in broad recessions in item prices in practically all grades of lumber during 1930. Resumption of building activity in the several branches of the nation's building activity should bring about comparative advances in the price of lumber in 1931.

Practically two years of curtailment in home building has resulted in something more than the demand from normal growth for residential requirements. Furthermore, the idea of home ownership has become deeply rooted in the minds of many of our people.

Building and loan associations, investment bankers and others engaged in financing construction occupy improved positions and there is every prospect that construction will be adequately financed at reasonable cost, particularly in view of the fact that the nation's building program is a determining factor in the degree of our prosperity.

Suspension of operations in car construction and repair shops starting with some roads in the late spring, has resulted in a large accumulation of bad order cars. The amount of lumber required for their repair and modernization will total millions of feet.

New freight car construction contemplated when the depression struck more than a year ago will in all probability reappear in the nature of firm business; in fact, inquiries for certain roads are now in the hands of car builders and other larger schedules are under construction.

From the industrial field will come considerable demand. There was on the boards of the architects and industrial engineers plans for a tremendous amount of new building, and these new prospects were pigeonholed when the crash broke in 1929. That our producers of structural lumber will enjoy a heavy demand from this source there is no question. Heavy appropriation by municipalities, states and the Federal Government for construction of highways will serve to expand the demand for structural lumber used extensively in bridge and highway construction.

From the motor industry, which con-

sumes a large amount of lumber, comes inquiry for substantial quantities of our production for 1931 requirements. Inquiries are in the hands of lumber manufacturers, and in some contracts effort is being made to insert a clause allowing the purchaser to increase the amount as much as 100 per cent.

In the export trade the lumber industry has every reason to expect a continuation of demand, at least on the present scale, and it is altogether probable that the demand from customers abroad may be very materially increased. Granting that the element of uncertainty still exists in some countries that consume our lumber products, it is the belief of many that any changes that take place will be for the better, and with this would come a resumption of lumber demand.

The lumber with which to meet 1931 demand will have to be in a large measure produced. Granting that there is some surplus on yards of manufacturers, it for the most part represents increases in the amount of items always more or less in surplus. Inventories of staple

lumber at the mills have been very materially reduced and, on the whole, the supply has been liquidated. Stocks on hand with the retail distributors are perhaps at the lowest point on record. In the storage yards of the railroads, car builders and industrial consumers virtually nothing is in reserve.

Promotional activity in all lines is more definitely aligned with sales organizations, which are in turn supported by a greater measure of cooperation in the divisions of production than at any time in the past. A great deal of constructive thought has been devoted to the merchandising end of the lumber business, which means that the consumer will be interested, sold, served and assisted in the use of certified high quality products suited to his wishes and the purpose to be served.

## Bank Management Conference

Plans are being made for the second bank management conference for the Central Atlantic states to be held in Washington, D. C., on February 26 and 27. Banking associations of Delaware, Maryland, New Jersey, New York, Pennsylvania, Virginia, West Virginia and the District of Columbia will be represented at the conference. President Robert V. Fleming of Riggs National Bank, Washington, is chairman of the committee on arrangements.

## Additional Potash Findings

**T**HE Geological Survey has recently completed analyses of the cores from the 17th and 18th Government potash test holes drilled in Lea County, N. Mex., and Loving County, Tex., by the Bureau of Mines. Though these are more than 50 miles apart, each reveals the presence of beds containing carnallite and sylvite, two of the most important potash minerals of the European fields, in addition to numerous beds of polyhalite. Probably none of the beds encountered in either hole has sufficient richness to become of immediate com-

mercial interest, but several in hole 17 are possibly of prospective importance.

The 18th Government test hole is in Loving County, Tex., about 1½ miles southwest of the Leeman ranch house and 4 miles from the 12th Government test hole recently drilled in Winkler County.

In addition to the core samples reported, the Geological Survey since the press announcement August 25, 1930, has analyzed cuttings from four wells in New Mexico and four in Texas.

### RECENT ANALYSES OF TEXAS WELL CUTTINGS

		Best Samples	
		Per Cent Potash Content	Depth, Feet
Andrews	Deep Rock Oil Co., Miles No. 1, sec. 22, block A-46, public-school land	8.10	2, 140-2, 150
Ector	Simms Petroleum Co., University No. 2, sec. 3, block 35	7.53	1, 450-1, 465
Ector	Southern Crude Oil Purchasing Co., Cowden No. 1....	5.60	2, 290-2, 300
	Sec. 26, T. 1. N., block 43, T. & P. survey.....	5.88	2, 395-2, 415
Loving	California Co., Regan-McIlvain No. 2, sec. 84, block 1, W. & N. W. R. R. survey.....	3.28	1, 545-1, 555

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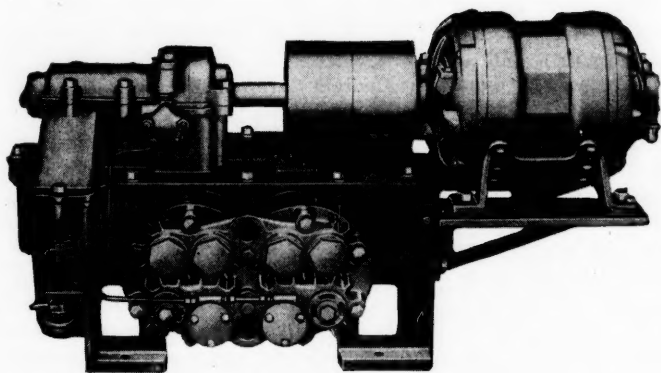
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## Chemistry in Farm Relief

A GOLDEN era faces agriculture, declares Dr. William J. Hale of the Dow Chemical Company, Midland, Mich., in a report to the American Chemical Society, prophesying that "stupendous advances lie just ahead in the development of new foods."

Prosperity for the farmer is at hand through the use of grain as raw material for chemical manufacturing plants, according to Dr. Hale. The farmer would not export grain under the system Dr. Hale foresees, but would sell it to industries in his district which would utilize it without waste. When agriculture enters the chemical industry, farm waste will be unknown, and the troublesome surplus will vanish through joint effort of the farm co-operatives and the carbohydrate industries, with the financial backing of the Federal Farm Board,

Dr. Hale asserts. This plan he describes as "diametrically different from the dole or debenture scheme so utterly un-American in conception and so drastically condemned by the public."

"This is the dream of organic chemists who envisage complete utilization of nature's products," says Dr. Hale. "It is the dream of nations for self-containment." The agricultural overproduction of today he looks upon as opening the door to prosperity. Further:

"The surplus of today may be made to serve as a bridge between the mediaeval custom of growing agricultural products for an indiscriminate market and the new advanced practice of growing agricultural products primarily for well-defined and distinct markets, where contractual agreements concern themselves only with acreage under cultivation."

"Our agriculturists should cease try-

ing to sell staples in a world market. We are not world agriculturists. Since the World War we actually have become world industrialists.

"By turning our agricultural products into chemical utilization at home the so-called 'farm problem' becomes a relic of the past. Why should we be exporting wheat, cotton, and other products of the land? Everything we cultivate, save on the lowest priced lands, can be grown cheaper elsewhere. But given efficient farming, the products of our land, through chemical transformation processes, can easily be made to compete with these industrial products of other countries.

"For agriculture the golden opportunity is at hand. Through closely interlocked chemical processes, as applied to agricultural staples, we shall unfold a new era in our food industries.

"The chemical manufacturing plants making use of agricultural raw material must be located at the heart of those agricultural zones concerned in the supply of organic products. In this way also the farmers will have a common financial interest in the development of their own zones."

### \$43,500,000 CONSTRUCTION PROGRAM

Standard Gas and Electric Company Has Big Budget for 1931

Louisville, Ky.—The Standard Gas and Electric Co., Chicago, Ill., parent company of the Louisville Gas & Electric Co., Oklahoma Gas & Electric Co. and others, has announced a construction program for its subsidiary and affiliated companies for 1931 of \$43,500,000. Properties of the company are located in 20 states, serving more than 1600 towns and cities, it is said. Projects now in progress throughout the Standard system involving a cost of \$12,911,000 are included in the 1931 budget, while five major electrical projects were practically completed in 1930, adding 125,500 kilowatts to the system and bringing the total installed steam and hydro-electric generating capacity of the system to 1,521,203 kilowatts. Engineering and construction were handled by the Bylesby Engineering & Management Corp., Chicago. The 1931 budget calls for an expenditure in the electric department of \$31,176,159; gas department, \$6,206,377, and other departments, including general construction, \$6,213,721.

### \$4,500,000 for New Roads

Little Rock, Ark.—Following action of the State Highway Note Board in authorizing the construction of approxi-

mately \$4,500,000 of roads and bridges, suspended last fall because of financial depression, this will go forward at once. In addition, the Commission will open bids January 15 for \$2,000,000 worth of construction and award contracts February 12. Contracts to be awarded in January and February will cover concrete or other high type construction on four trunk roads—Fort Smith to Bentonville and the Missouri line, Little Rock to Memphis, Fort Smith to Memphis via Augusta; from Texarkana to Corning and the Missouri line.

### Paving Brick Manufacturers

The National Paving Brick Manufacturers Association, with offices in the National Press Building, Washington, D. C., will hold its twenty-fifth annual meeting at the William Penn Hotel, Pittsburgh, Pa., February 4, 5 and 6, 1931. The first day of the meeting will be taken up by registration in the morning, a luncheon at noon and business session in the afternoon, while the program for the last two days will include papers and discussions of the latest practices in the design and construction of streets and highways, particularly of the vitrified brick type. A feature will be a paper describing the recent construction of an experimental brick pavement with metal base in Illinois, which will be discussed by a representative of the Flat Rolled Steel Manufacturers Association. Leading engineers, contrac-

tors and paving authorities will be represented on the program and the sessions will be open to the public.

### \$4,000,000 BRICK AND TILE MERGER

New Company to Operate 13 Southern Plants

Macon, Ga.—Consolidating the operation of five Southern brick and tile manufacturing companies, the Southern Brick and Tile Co., with executive offices in this city, has begun formal operation of the merged plants and offices, said to represent an investment of \$4,000,000. Companies involved in the merger include the Bibb Brick Co., the Cherokee Brick Co. and the Standard Brick & Tile Co., all of Macon; the Columbus Brick & Tile Co., Jacksonville, Fla., and the Georgia Carolina Brick Co., Augusta, Ga. Thirteen completely equipped plants will be operated by the new company located at Macon, Augusta, Columbus and Bainbridge, Ga.; Society Hill, S. C.; Daisy, Tenn., and at Dixon and Callahan, Fla. This merger makes the new organization probably the largest manufacturer of burned clay products in the South. It will produce a comprehensive line of face and common brick, hollow building tile, drain tile, turpentine cups, DuBrik and Jumbo Brick. Officers of the company include W. E. Dunwoody, president; C. W. Dixon, vice-president and secretary; J. C. Hagler, vice-president, and W. J. Massee, treasurer.

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Los Angeles, Portland, Seattle, Honolulu.**BETHLEHEM**

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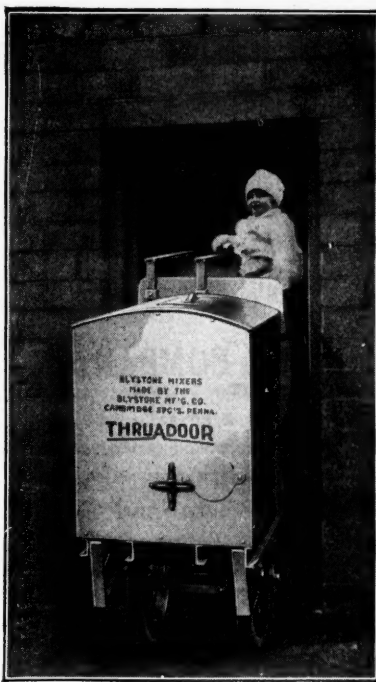
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THRUADOOR***often pays for itself***ON ONE JOB***Mixing***PLASTER—MORTAR—CONCRETE**

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Many contractors who have purchased Blystone Thru-A-Door Mixers have reported that the savings made on one job has paid the entire cost of mixer. Many mixers have paid for themselves many times over.

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**STEEL PLATEWORK***Every description of fabricated steel*TANKS—RECEIVERS—CHUTES—TRAYS—ORE BINS  
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The 1931

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Then there is the service of savings we have made to all of our policyholders since we started in business in 1887—20% or more of premiums received by this company have been returned to policyholders each year.

This company is the largest writer of workmen's compensation insurance in Maryland and in the South.

## American Mutual

LIABILITY INSURANCE COMPANY

Offices in principal cities including Baltimore, Maryland.



# FINANCIAL NEWS

## Bond Issues Proposed

Ala., Florence—Bd. of City Comms. recently adopted ordinance providing for issuing \$40,000 refunding bonds.

La., Baton Rouge—State Highway Comsn., O. K. Allen, Chmn., opens bids Feb. 11 for \$15,000,000, \$1000 denom. bonds. 1-1

La., Baton Rouge—East Baton Rouge Parish Police Jury, Jos. Gehelin, Pres., opens bids Jan. 27 for \$100,000 bonds, not less than par and accrued interest.

La., Lake End—Red River-Bayou Pierre Levee & Drainage Dist. of Louisiana, M. H. Bosley, Sec., opens bids Jan. 21 for \$75,000, 5% \$1000 denom. bonds.

Md., Annapolis—Anne Arundel County Comms., Elmer E. Parkinson, Pres., opens bids Jan. 31 for \$1,000,000 school bonds. 12-4

Md., Baltimore—City, Public Improvement Comsn., approved recommendation from its water committee that city administration ask Legislature to authorize loan of \$35,000,000 for additional water supply for Baltimore; to be submitted to voters in May.

N. C., Charlotte—City Council authorized issuing \$500,000 bonds for widening and extending Graham St. 12-25

Okla., Chickasha—Grady County defeated \$300,000 courthouse and jail bonds. 12-11

Okla., Erick—City will vote on \$50,000 light and power system bonds.

Okla., Sulphur—City recently voted \$35,000 park bonds.

Tex., Andrews—Andrews County votes Jan. 8 on \$200,000 road bonds.

Tex., Beaumont—City will offer for sale about Feb. 1 \$400,000 bonds; \$200,000 street paving; \$50,000, water lines; \$150,000, sewers. 12-25

Tex., Big Lake—Reagan County, H. L. Puckett, Clk., voted \$275,000, 5%, \$1000 denom. bonds for 34 mi. paving, State Highway 99 and Federal Highway 67.

Tex., Big Spring—Howard County defeated \$900,000 road bonds. 12-11

Tex., Boerne—Kendall County may vote on \$177,000 highway construction bonds.

Tex., El Paso—City, G. R. Daniels, Auditor, opens bids Feb. 12 for 6 bond issues amounting to \$465,000, \$1000 denom., 5%.

Tex., Henderson—Overton Road Dist. No. 1, Rusk County, voted \$25,000 road bonds.

Tex., Hunt—Hunt Independent School Dist. voted \$25,000 bonds.

Tex., Lamesa—Dawson County plans voting highway bonds.

Tex., Nixon—City votes Jan. 14 on \$35,000 bonds; building, \$5000; street, \$30,000.

Tex., Richmond—Fort Bend County Road Dist. No. 13 plans election on \$330,000, 5½% road bonds.

Tex., San Angelo—City, E. E. Laurie, City Mgr., defeated \$75,000 refunding and airport bonds. 11-27

Tex., San Saba—San Saba County, Richland Springs Precinct, may vote on \$175,000 road and bridge bonds.

Tex., Seminole—Gaines County votes Jan. 17 on \$150,000 highway construction bonds.

Tex., Sherman—City, O. J. S. Ellingson, City Mgr., opens bids Jan. 26 for \$90,000, 5% school building bonds. 12-18

Tex., Sinton—San Patricio County Comms.' Court ordered election Jan. 17 in Fresh Water Supply Dist. No. 1 on \$80,000 bonds for supplying fresh water for domestic use.

Tex., Tahoka—Lynn County probably vote in near future on \$800,000 highway improvement bonds.

Tex., Tenaha—City recently voted \$35,000 water works bonds. 12-4

Va., Roanoke—City, P. H. Tucker, City Clk., votes Jan. 20 on \$300,000 sewer and drain bonds.

W. Va., Parkersburg—City, Allen C. Muddock, Mayor, plans voting on bonds for water system, street paving, sewers and other public improvements.

## Bond Issues Sold

La., Baton Rouge—City Comsn. sold \$190,000, 5% sewer bonds to Whitney Trust & Savings Bank and Hibernia Securities Co., both New Orleans. 12-4

N. C., Mount Olive—Town, Augusta Wilford, Clk., sold \$20,000, 6%, \$1000 denom. refunding bonds to R. L. Durfee & Co., Toledo, Ohio, at 100.11. 12-25

N. C., Statesville—Statesville Graded School Dist., J. C. Fowler, Sec., sold \$25,000, \$1000

denom., 5¼% bonds to Stranahan, Harris & Co., Toledo, Ohio, at \$25,035 and accrued interest. 12-25

N. C., Winston-Salem—Forsyth County Comms., J. M. Lentz, Clk., sold \$88,000, not to exceed 4¼% bond anticipation loan notes to Wachovia Bank & Trust Co., Winston-Salem, at par. 12-11

## New Financial Corporations

La., Shreveport—Continental Trust & Savings Banks, George M. Hearne, Chmn. of Bd.; J. Homer Jordan, Pres., formed to acquire Continental Bank & Trust Co., George M. Hearne, Pres.

Md., Baltimore—Colston, Trail & Middendorf, Inc., Keyser Bldg., formed by merger of Colston, Heald & Trail and J. Wm. Middendorf & Sons; Thomas S. Trail, Pres.; Edgar R. Smith, Sec.

Md., Baltimore—Securities Holding Co., 815 Continental Bldg., chartered; William L. Galvin, J. Irvin McCourt.

Mo., Doniphan—M. C. Horton, Ed. L. Abington and associates organizing bank with \$25,000 capital.

Mo., Luxembourg—Lafayette National Bank & Trust Co., capital \$50,000, chartered; John P. Meyer, Pres.; T. W. Felsch, Cashier.

Mo., St. Louis—Sterling Securities Co., capital \$20,000, chartered; Lester Sebelsky, 5347 Cabanne Ave.

N. C., Wilson—Wilson Securities Corp.,

capital \$50,000, chartered; Wade A. Gardner, Anderson St.

Bank of Rison, N. A. McKinney, Pres., and Farmers & Merchants' Bank, J. M. May, Pres., both Rison, Ark., consummated merger.

Bank of St. Helen's, Nick Bibbelhauser, Pres., Shively, Ky., authorized by W. A. Dicken, State Banking Commr., Frankfort, to reopen.

Capital Building & Loan Assn., Frankfort, Ky., increased capital, \$1,500,000 to \$2,500,000.

Coconut Grove Bank, John Opsahl, Pres., and Florida Exchange Bank, K. C. Knudson, Pres., both Coconut Grove, Miami, Fla., merged.

Coggin National Bank, C. L. McCartney, Pres., and Citizens' National Bank, F. S. Abney, Pres., both Brownwood, Tex., merged.

Columbus National Bank, G. Y. Banks, Pres., and Columbus National Bank, J. W. Slaughter, Pres., both Columbus, Miss., merged.

First National Bank in Electra, J. A. Coaker, Pres., and First State Bank, M. C. Parrish, Pres., both Electra, Tex., recently merged under name of First State Bank.

Peoples Bank, G. P. Heath, Pres., Sulphur, Ky., authorized by W. A. Dicken, State Banking Comsn., Frankfort, to reopen.



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*-all that tens of thousands of Porto Rican Children have for Breakfast*

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# PROPOSALS

BOND ISSUES

BUILDINGS

PAVING

GOOD ROADS



Bids close January 22, 1931.

U. S. Engineer Office, Jacksonville, Fla.—Sealed bids, in duplicate, will be received here until 12 noon, January 22, 1931, and then opened, for furnishing all labor and materials and performing all work for dredging approximately 502,000 cubic yards of material other than rock and 75,000 cubic yards of rock in Sparkman Channel, Tampa Harbor, Fla. Further information on application.

Bids close January 26, 1931.

U. S. Engineer Office, Jacksonville, Fla.—Sealed bids, in duplicate, will be received here until 12 noon, January 26, 1931, and then opened, for furnishing all labor and materials and performing all work for dredging approximately 137,000 cubic yards of material other than rock and 274,000 cubic yards of rock in turning basin of Miami Harbor, Fla. Further information on application.

Bids close January 17, 1931.

U. S. Engineer Office, 300 Custom House, Baltimore, Md. Sealed proposals will be received here until 3 P. M., Eastern Standard Time, January 17, 1931, and then publicly opened, for dredging to a minimum depth of 36 feet at mean low water over a width of 150 feet on the north side of Curtis Bay section, and also maintenance dredging in the existing channel from Fort McHenry section to and including the turning basin at the inner end, and widening at the inner angle between the inner harbor and the Ferry Bar section of channel to Baltimore, Md., to a minimum depth of 35 feet; amounting to approximately 1,452,410 cubic yards of material.

Bids close January 20, 1931.

**SEALED BIDS**, in triplicate, subject to the conditions contained herein, will be received by the U. S. Veterans Bureau, Room 764, Arlington Building, Washington, D. C., until 2.30 P. M., January 20, 1931, and then publicly opened, for furnishing all labor and materials and performing all work required for constructing and finishing complete at U. S. VETERANS HOSPITAL, INDIANAPOLIS, INDIANA, BUILDINGS AND UTILITIES, including roads, walks, grading and drainage. This work will include excavating, reinforced concrete construction, hollow tile, brick work, cut stone, cast stone, marble work, floor and wall tile, rubber tile, compressed asphalt tile and linoleum floors, terrazzo, iron work, flag pole, steel sash, steel stairs with slate treads, steel shelving, cabinets and partitions, slate, metal and built-up roofing, roof ventilators, lightning conductors, metal lathing, plastering, carpentry, dumbwaiter, platform scale, metal weather strips, insect screens, window shades, painting, glazing, hardware, plumbing, vacuum cleaning system, refrigerating and ice making plant, zeolite water softening system, boiler plant, radial brick chimney, heating and ventilating, electrical work, electric elevators, nurses call system, fire alarm system and outside sewer, water, gas, steam and electric distribution systems. **SEPARATE BIDS** will be received for (a) General Construction (including plumbing, heating, electrical work and outside distribution systems); (b) Electric Elevators; (c) Zeolite Water Softening System; (d) Refrigerating and Ice Making Plant; (e) Radial Brick Chimney; all as set forth on bid form.

Bids will be considered only from individuals, firms or corporations possessing satisfactory financial and technical ability, equipment and organization to insure speedy completion of the contract, and in making awards the records of bidders for expedition and satisfactory performance on contracts of similar character and magnitude will be carefully considered. At the discretion of the Director, drawings and specifications may be obtained upon application to the Construction Division, Room 764, Arlington Building, Washington, D. C. Deposit with application of a check or Postal Money Order for \$40.00, payable to the TREASURER OF THE UNITED STATES, is required as security for safe return of the drawings and specifications within ten days after date of opening bids. **GEORGE E. IJAMS**, Director. December 15, 1930.

## GENERAL INFORMATION

### About Proposal Advertising in Manufacturers Record

**PUBLICATION DAY: Thursday.**  
**FORMS CLOSE: 10 A. M. Tuesday.**

When too late to send copy by regular mail to reach us by 10 A. M. Tuesday, forward by night letter or air mail when possible.

### THE DAILY CONSTRUCTION BULLETIN OF THE MANUFACTURERS RECORD

Published every business day, gives information about the industrial, commercial and financial activities of the South and Southwest.

The Daily Construction Bulletin can be used to advantage when copy cannot reach us in time for publication in the Manufacturers Record before bids are to be opened or when daily insertions are necessary to meet legal requirements.

*The rate is the same for both publications—35 cents a line each insertion.*

Bids close January 17, 1931.

U. S. Engineer Office, 300 Custom House, Baltimore, Md. Sealed proposals will be received here until 3 P. M., Eastern Standard Time, January 17, 1931, and then publicly opened, for dredging approximately 297,200 cubic yards of material in Wicomico River, Maryland.

Bids close January 13, 1931.

U. S. Engineer Office, Wilmington, N. C. Sealed bids in duplicate will be received until 4 P. M., January 13, 1931, and then publicly opened, for furnishing all labor and materials and performing all work for dredging approximately 209,000 cubic yards in Harbor at Morehead City, N. C. Further information upon application.

Bids close January 17, 1931.

U. S. Engineer Office, 300 Custom House, Baltimore, Md. Sealed proposals will be received here until 3 P. M., Eastern Standard Time, January 17, 1931, and then publicly opened, for dredging approximately 4073 cubic yards of material, place measurement, at mouth of Nandua Creek, Va., 38,690 cubic yards at mouth of Occohannock Creek, Va., and 33,440 cubic yards from waterway from Tangier Sound to Ewell (Smith Island, Md.)

Bids close January 15, 1931.

U. S. Engineer Office, Jacksonville, Fla.—Sealed bids, in duplicate, will be received here until 12 noon, January 15, 1931, and then opened, for furnishing all labor and materials and performing all work for dredging approximately 389,000 cubic yards of soft material in channel approach to Port of St. Petersburg, Fla. Further information on application.

Bids close January 17, 1931.

U. S. Engineer Office, 300 Custom House, Baltimore, Md. Sealed proposals will be received here until 3 P. M., Eastern Standard Time, January 17, 1931, and then publicly opened, for dredging approximately 41,490 cubic yards, place measure, in Elk River, Md., 47,120 cubic yards in Claiborne Harbor, Md., 10,486 cubic yards in Choptank River, Md., at Pealliquor Shoal, and 11,132 cubic yards in Herring Bay and Rockhole Creek, Maryland.

Bids close January 13, 1931.

U. S. Engineer Office, Wilmington, N. C. Sealed bids in duplicate will be received until 3 P. M., January 13, 1931, and then publicly opened, for furnishing all labor and materials and performing all work for dredging approximately 138,000 cubic yards in Far Creek, N. C., from Pamlico Sound to Engelhard, and 11,400 cubic yards in Silver Lake Harbor, N. C., making a total of 149,400 cubic yards. Further information upon application.

Bids close January 17, 1931.

U. S. Engineer Office, 300 Custom House, Baltimore, Md. Sealed proposals will be received here until 3 P. M., Eastern Standard Time, January 17, 1931, and then publicly opened, for dredging in Cutoff-Brewerton Angle and part of the Brewerton section of channel leading to Baltimore, material estimated to measure 1,714,606 cubic yards.

Bids close January 13, 1931.

U. S. Engineer Office, Wilmington, N. C. Sealed bids, in duplicate, will be received until 1 P. M., January 13, 1931, and then publicly opened, for furnishing all labor and materials and performing all work for dredging approximately 569,000 cubic yards in Pamlico River, N. C. Further information upon application.

Bids close January 17, 1931.

U. S. Engineer Office, 300 Custom House, Baltimore, Md. Sealed proposals will be received here until 3 P. M., Eastern Standard Time, January 17, 1931, and then publicly opened, for dredging an extension to the Riverview Anchorage to the northeast of Fort McHenry section of channel leading to Baltimore; material estimated to measure 2,749,778 cubic yards.

Bids close February 6, 1931.

Office of Public Buildings and Public Parks, Room 1031, Navy Building, Washington, D. C. Sealed bids will be received until 11 A. M., February 6, 1931, for the construction of an office building for the American Red Cross. This building will be approximately 228 by 62 feet, with five stories, attic and basement, and will be constructed of structural steel and reinforced concrete with marble exterior. All mechanical work is included. A deposit in the form of a certified check for \$100 will be required to secure plans. Further information upon application.

Bids close January 13, 1931.

U. S. Engineer Office, Wilmington, N. C. Sealed bids in duplicate will be received until 2 P. M., January 13, 1931, and then publicly opened, for furnishing all labor and materials and performing all work for dredging approximately 288,800 cubic yards in Harbor at Beaufort, N. C., including Gallants Channel; 18,400 cubic yards in Waterway connecting Core Sound and Beaufort Harbor, N. C.; 2900 cubic yards in Inland Waterway from Norfolk, Va., to Beaufort Inlet, N. C.; making a total of 310,100 cubic yards. Further information upon application.

Bids close January 20, 1931.

## Sale of \$10,000 Northampton County, Virginia Refunding School Bonds

Cape Charles, Va.

By order of the School Board of Northampton County, Virginia, approved by the Board of Supervisors of the said County, sealed bids will be received by Helen E. Lowe, Clerk of said School Board, at Cape Charles, Northampton County, Virginia, until January 20, 1931, at 12 o'clock M., for all or any part of \$10,000; the said bonds to be in the denomination of \$1000 each and payable \$1000 on each March 15th from 1932 to 1941, inclusive, with coupons attached for the semi-annual payment of interest, said bonds to be dated and money furnished on March 15, 1931; both principal and interest being payable at the office of the Treasurer of Northampton County, Capeville, Virginia, or at the Farmers & Merchants Trust Bank, Cape Charles, Northampton County, Virginia, at the option of the holder. These bonds are to be issued for the refunding of \$10,000 Capeville District 6% school bonds, maturing March 15, 1931, which were issued pursuant to Chapter 34 of the Code of Virginia, 1919.

The right to reject any or all bids is reserved by the School Board.

**HELEN E. LOWE**,  
Clerk, School Board,  
Northampton County, Virginia.



Bids close January 13, 1931.

U. S. Engineer Office, Wilmington, N. C. Sealed bids, in duplicate, will be received until 12 o'clock noon, January 13, 1931, and then publicly opened, for furnishing all labor and materials and performing all work for dredging approximately 2,109,837 cubic yards of sand, mud, etc., Section III of Cape Fear River, N. C., at and below Wilmington. Further information upon application.

Bids close January 13, 1931.

U. S. Engineer Office, Wilmington, N. C. Sealed bids, in duplicate, will be received until 11 A. M., January 13, 1931, and then publicly opened, for furnishing all labor and materials and performing all work for dredging approximately 3,282,947 cubic yards of sand, mud, etc., and 65,800 cubic yards of rock in Sections I and II of Cape Fear River, N. C., at and below Wilmington. Further information upon application.

Bids close January 20, 1931.

### Bridge STATE OF MARYLAND STATE ROADS COMMISSION NOTICE TO CONTRACTORS

Baltimore, Md.

SEALED PROPOSALS for building a bridge as follows:

Frederick County, Contract No. F-158-53—Steel and Concrete Bridge (approximately 145 feet, between end bents) over the tracks of the Baltimore and Ohio Railroad Company, at Frederick Junction, including all the necessary earth approaches, surfacing, etc.,

will be received by the State Roads Commission at its offices, Federal Reserve Bank Building, Calvert and Lexington Streets, Baltimore, Maryland, until 12 M. on the 20th day of January, 1931, at which time and place they will be publicly opened and read.

Bids must be made upon the blank proposal form which, with specifications and plans, will be furnished by the Commission upon application and cash payment of \$1.00, as hereafter no charges will be permitted.

No bids will be received unless accompanied by a certified check for the sum of Five Hundred (\$500) Dollars, payable to the State Roads Commission.

The successful bidder will be required to give bond and comply with the Acts of the General Assembly of Maryland respecting contracts.

The Commission reserves the right to reject any and all bids.

BY ORDER of the State Roads Commission this 29th day of December, 1930.

G. CLINTON UHL, Chairman.  
L. H. STEUART, Secretary.

Bids close January 27, 1931.

### Delaware Highway Work

Dover, Del.

Sealed proposals will be received by the State Highway Department, at its office, Dover, Del., until 2:00 o'clock P. M., January 27th, 1931, and at that place and time publicly opened for contracts involving the following approximate quantities:

#### CONTRACT NO. 168

Little Creek-Bay Road 4.119 Miles  
17,000 Cu. Yds. Excavation.  
3,000 Cu. Yds. Borrow.  
100 Tons Broken Stone Base Course.  
4,230 Cu. Yds. Cement Concrete Pavement.  
2,400 Lin. ft.  $\frac{3}{4}$ " Expansion Joint.  
100 Cu. Yds. Class A Concrete.  
2,000 Lbs. Reinforcement.  
800 Lin. ft. 15" Corr. M. Pipe.  
180 Lin. ft. 15" R. C. Pipe.  
190 Lin. ft. 18" R. C. Pipe.  
30 Lin. ft. 24" R. C. Pipe.  
10,000 Lin. ft. Wood Shoulder Curb.

#### CONTRACT NO. 175

Fleming's Corner-Whiteleysburg 7.909 Miles  
4 $\frac{1}{2}$  Acres Clearing.  
4 $\frac{1}{2}$  Acres Grubbing.  
21,000 Cu. Yds. Excavation.  
14,000 Cu. Yds. Borrow.  
200 Tons Broken Stone Base Course.  
8,150 Cu. Yds. Cement Concrete Pavement.  
4,700 Lin. ft.  $\frac{3}{4}$ " Expansion Joint.  
560 Cu. Yds. Class A Concrete.  
24,000 Lbs. Reinforcement.  
1,200 Lin. ft. 15" Corr. M. Pipe.  
180 Lin. ft. 15" R. C. Pipe.  
210 Lin. ft. 18" R. C. Pipe.  
60 Lin. ft. 24" R. C. Pipe.  
30 Lin. ft. 30" R. C. Pipe.  
30 Lin. ft. 36" R. C. Pipe.  
30 Lin. ft. 42" R. C. Pipe.  
12,000 Lin. ft. Wood Shoulder Curb.  
2,000 Lin. ft. Timber Piling.  
2 M ft. B. M. Sheet Piling.

#### CONTRACT NO. 179

Double Bridges-Redden 5.458 Miles  
11-1/3 Acres Clearing.  
9-1/2 Acres Grubbing.  
13,000 Cu. Yds. Excavation.  
12,000 Cu. Yds. Borrow.  
100 Tons Broken Stone Base Course.  
5,625 Cu. Yds. Cement Concrete Pavement.  
3,200 Lin. ft.  $\frac{3}{4}$ " Expansion Joint.  
250 Cu. Yds. Class A Concrete.  
8,000 Lbs. Reinforcement.  
22,000 Lbs. Structural Steel.  
600 Lin. ft. 15" Corr. M. Pipe.  
200 Lin. ft. 18" R. C. Pipe.  
100 Lin. ft. 18" R. C. Pipe.  
30 Lin. ft. 24" R. C. Pipe.  
30 Lin. ft. 30" R. C. Pipe.  
30 Lin. ft. 36" R. C. Pipe.  
7,000 Lin. ft. Wood Shoulder Curb.  
900 Lin. ft. Timber Piling.  
2 M ft. B. M. Sheet Piling.

#### CONTRACT NO. 182

Fieldsboro-Odessa, Dual Highway grading 2.623 Miles  
2 Acres Clearing.  
50,000 Cu. Yds. Excavation.  
65,000 Cu. Yds. Borrow.  
425 Cu. Yds. Class A Concrete.  
22,500 Lbs. Reinforcement.  
3,500 Lbs. Cast Iron Gratings.  
250 Lin. ft. 15" C. M. Pipe.  
180 Lin. ft. 18" C. M. Pipe.  
210 Lin. ft. 18" R. C. Pipe.  
140 Lin. ft. 24" R. C. Pipe.  
80 Lin. ft. 36" R. C. Pipe.  
1,000 Lin. ft. Timber Piling.  
10 M ft. B. M. Sheet Piling.

#### CONTRACT NO. 182A

Odessa-Drawyers, Fill and Small Structures 1.797 Miles  
1 Acre Clearing.  
30,000 Cu. Yds. Excavation.  
110,000 Cu. Yds. Borrow.  
20 Cu. Yds. Class A Concrete.  
500 Lbs. Reinforcement.  
1,500 Lbs. Cast Iron Gratings.  
300 Lin. ft. 15" C. M. Pipe.  
150 Lin. ft. 18" R. C. Pipe.  
40 Lin. ft. 24" R. C. Pipe.

Performance of contract shall commence within ten (10) days after execution of the contract and be completed as specified.

In the employment of labor, preference shall be given to residents of the State of Delaware.

Monthly payments will be made for 90 per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by a surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No. ...."

The Contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained upon receipt of two dollars (\$2.00) for each contract, which amount will not be refunded.

STATE HIGHWAY DEPARTMENT.

Bids close January 13, 1931.

### Sewer Construction

Cambridge, Maryland.

Sealed proposals for the construction of approximately 15,000 feet of sewers, ranging in size from 6 in. to 24 in., will be received by the Commissioners of Cambridge, Cambridge, Maryland, at the City Hall until 9:00 P. M., Tuesday, January 13, 1931, at which time and place they will be publicly opened and read.

Bids must be made on the standard proposal form, which, with specifications and plans, may be obtained from the City Engineer for the sum of \$1.00, which will not be refunded. Bids must be accompanied by a certified check, payable to the Commissioners of Cambridge, for not less than 5% of the bid.

The successful bidder will be required to give bond, at his expense, and enter into a contract with the City of Cambridge.

The Commissioners reserve the right to reject any or all bids, and to accept any bid which may appear to be to the best interests of the City of Cambridge.

By order of the Commissioners of Cambridge,

CARROLL L. DAIL,  
Clerk and Treasurer.  
GUY L. BRYAN, JR.,  
City Engineer.

Bids close January 23, 1931.

### Excavation for Drainage

Birmingham, Ala.

Sealed proposals will be received by the undersigned until ten o'clock A. M., Friday, January 23, 1931, for certain earth and rock excavation and rip-rap masonry which is proposed to be done by the City of Birmingham on Section Three of Village Creek draining project (from Avenue W, Ensley, to Tenth Street, West).

The approximate principal quantities being as follows: 149,200 Cu. Yds. Earth Excavation, 65,000 Cu. Yds. Rock Excavation and 700 Sq. Yds. Rip-Rap Masonry.

Specifications may be obtained and plans examined at this office. The right is reserved to reject any or all proposals.

A. J. HAWKINS,  
City Engineer.

Bids close January 20, 1931.

### Paving and Sewers

Prichard, Ala.

Sealed bids will be received by the City of Prichard, Ala., at the office of City Clerk until 7:30 P. M., January 20th, 1931, and at that time publicly opened for the construction of certain paving, storm and sanitary sewers, sidewalks, curb and gutter, etc. The same being under Improvement Ordinances No's. 105, 106 and 107. The principal items of work are approximately as follows:

12,900 cu. yds. common excavation.  
28,900 lin. ft. curb and gutter.  
12,700 sq. yds. concrete street paving.  
16,500 sq. yds. concrete sidewalk.  
4,695 lin. ft. storm sewers and appurtenances.  
7,365 lin. ft. sanitary sewers and appurtenances.

Plans and specifications are on file in the office of the City Clerk at Prichard, and in the office of the Consulting Engineers, Birmingham, Alabama. Specifications and proposal blanks can be secured, on deposit of \$5.00, from the undersigned or from the Consulting Engineers. Copy of the plans will be mailed by the Consulting Engineers on receipt of payment (not deposit) of \$5.00.

The bidder shall agree to accept special assessment bonds at par and accrued interest in payment for said work.

The right is reserved to reject any or all bids.

Cash or certified check or proposal bond for Five Thousand Dollars made payable to the City of Prichard, Alabama, must accompany each bid as evidence of good faith and as a guarantee that if awarded contract the bidder will execute the contract and give bond as required.

T. M. WILKINS.

ROBERT L. TOTEN, INC.  
Consulting Engineers, Birmingham, Ala.

Bids close January 26, 1931.

### Sanitary Sewer System

Donaldsonville, La.

Sealed proposals will be received by the Commission Council at City Hall, Donaldsonville, La., until 11 A. M., January 26, 1931, for the construction of a complete sanitary sewer system for the City.

The work will include the furnishing of all labor, material and equipment necessary for the construction of approximately 12 miles of main and lateral sewers varying in size from 8 to 12 inches, 22,500 lineal feet of house sewer connections, 5550 feet of 12-in. cast-iron pipe outfall, a complete raw sewage pumping station, and all other work and appurtenances specified or required.

Plans and specifications are on file in the Mayor's Office, Donaldsonville, La., and in the office of James W. Billingsley, Consulting Engineer, Interstate Bank Building, New Orleans, where they may be examined free of charge. Copies of same may be obtained from the Consulting Engineer upon payment of \$10.00, which will not be returned.

Proposals must be submitted on the special form provided by the Consulting Engineer.

A certified check or cash in the amount of 5% of the total bid price, deposited in accordance with the terms and conditions of the Specifications, will be required of the bidder.

A bond in the amount of the total contract price will be required of the successful bidder.

The right is reserved to reject any or all bids and to waive technicalities.

SIDNEY A. MARCHAND,  
Mayor.

JAMES W. BILLINGSLEY,  
Consulting Engineer.

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### MANGANESE DEPOSITS

FOR SALE ONLY—Rich manganese deposits in Ala. near Birmingham.  
THE MIDVALE MINING & DEVELOPMENT CO.,  
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### TIMBER AND TIMBER LANDS

13,000 ACRES of hardwood timber land for sale at a great sacrifice.  
T. B. FINLEY,  
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Sound Square Edge Red and White Oak Timbers sawn to size.  
HOUSTON BROS., Vicksburg, Miss.

ACREAGE BARGAINS—We have several desirable tracts; some are well stocked with fast growing pine timber. Many have enough advance growth to pay a good return on the investment above carrying charges during the holding period. Let us select the tract and manage it, taking our remuneration as a percentage of net earnings.  
THE JAMES D. LACEY COMPANY,  
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### FARM LAND WANTED

200 ACRES of cheap farm land on railroad for Nursery Southern Maryland.  
ARTHUR V. LEY,  
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Washington, D. C.

### FARM AND TIMBER LAND

160 ACRES Oklahoma land, heavy timber, \$1.50 an acre. 30 acres cultivated \$8.75 an acre. Must sell at once.  
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## FARM, FRUIT AND TRUCK LANDS

### FLORIDA

#### FOR SALE

Beautiful complete hundred acre Gulf Coast Island, finely located near good town, railroad, and highway. Rich soil, plenty trees, good shade. Delightful place for winter home. Bargain for quick sale. Address No. 9071, care Manufacturers Record.

### TEXAS

LOWER RIO GRANDE Valley orchards and acreage at actual value. Owner's price direct to you. Send for list. ROBERTS REALTY CO., Realtors, McAllen, Tex.

FARMS—2000-acre improved with tenant houses, outbuildings; levee protected; pumping plant; benefit tax paid; gravel road; 6 miles out; easily financed.  
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LONG TERM LOANS, large amounts, made on industrial, mercantile, sawmill properties. THOS. W. GILMER, Attorney, Bay Minette, Alabama.

FOR SALE, REASONABLE—Telephone business in good section of North Carolina on paved highway. If interested address No. 9064, care Manufacturers Record.

MANUFACTURERS—Write for our FREE Classification Sheets of inventions for sale, covering 135 main subjects, and in one or more of which you will doubtless be interested. ADAM FISHER MFG. CO., 578 Enright, St. Louis, Mo.

BIDS ASKED—The Florida CONFIDENTIAL INDUSTRIAL BULLETIN brings you advance listings of every bid or proposal asked by state, city, county or private interests, roads, bridges, general construction, schools, churches, dredging, drainage, irrigation, bonds, supplies, equipment, labor and materials. Send for free specimen copy, Florida Industrial Bulletin, Box 9118, Tampa, Fla.

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Man with capital wanted as partner by experienced farm manager in large-scale asparagus farming. Give references first letter.

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ENGINEERING REPORTS on resources of cities and towns. Recommendations for industrial development and zoning made by specialists in locating industries.

TECHNICAL SERVICE CO.,  
Woolworth Building New York City

## INDUSTRIES WANTED

WELL-LOCATED Southern town wants industry. Will furnish plant, moving expenses, additional capital and other concessions.

INDUSTRIAL SERVICE CORP.,  
Asheville, N. C.

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FOR SALE  
SHEET METAL PLANT  
fully equipped and operating. Sheets and angles available at mills here. Address  
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P. O. Box 42, Birmingham, Ala.

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FOR MANUFACTURING OR WAREHOUSE  
Corner Lot 99x340.

Well located on good street and extending back to tracks of three railroads. A special price to a quick buyer.

F. C. ABBOTT & CO.,  
201 Johnston Building,  
Charlotte, N. C.

33 years in Charlotte Real Estate.

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TWO AND ONE-QUARTER MILES railroad frontage industrial sites for sale at Baton Rouge. Southern Land and Investment Company, Baton Rouge, La.

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Charlotte office convenient to South. PAUL R. EATON, Registered Patent Attorney, 218 Johnston Building, Charlotte, N. C., and 314 McLachlen Building, Washington, D. C.

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A NEW CORPORATION handling full line of Chemicals, Oils, Dyestuffs, Specialties, Industrial Paints, etc., wants capable representatives to sell on commission basis. Answer in detail, No. 9074, care Manufacturers Record, Baltimore, Md.

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I WOULD LIKE to have position with progressive firm as mill or plant supt., operating work or construction work. Would also consider sawing, either band or circular, mill foreman or millwright building or operating. Also operating with any large company with machinery. Address No. 9076, care Manufacturers Record, Baltimore.

EXPERIENCED structural engineer with wide personal acquaintance among architects, engineers, contractors and fabricators throughout Texas wants position calling on these professions. Employed; available in 30 days. Address No. 9075, care Manufacturers Record, Baltimore, Md.

## MEN WANTED

IF YOU ARE OPEN to overtures for new connection and qualified for a salary between \$2500 and \$25,000, your response to this announcement is invited. The undersigned provides a thoroughly organized service of recognized standards and reputation, through which preliminaries are negotiated confidentially for positions of the caliber indicated. The procedure is individualized to each client's personal requirements, your identity covered and present position protected. Established twenty-one years. Send only name and address for details.

R. W. BIXBY, INC.,  
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FOR SALE—DIESEL ENGINE, 100 HP., Fairbanks-Morse type Y, 257 RPM. Splendid order. Immediate delivery. Address C. L. HILLS, P. O. Box 2452, Tampa, Fla.

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For Sale—Motors and Generators, A.C. and D.C. New and Rebuilt. Attractive prices. Large Stock. Write for our Price List.  
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Fort Wayne, Ind.

TO SELL—Westinghouse D. C. Power Plant, 110 volts, with battery, 3 generators of 1500 watts each. In good and smooth operating shape. Being removed because Power Co. energy available. Will sacrifice. Address H. J. PETTIT, Suffolk, Va.



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SUPERPHOSPHATE  
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Fertilizer Plants: Maryland 11; Virginia 9; Pennsylvania 10; Georgia 2, Ohio 2; North Carolina 11; South Carolina, Mississippi, Louisiana, Texas, Indiana, West Virginia, Tennessee, Connecticut and New Jersey 1 each.

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Factory Site and Buildings**

Parcel of land situated in the Royce-Lansdowne district, Toronto, Canada, containing approximately 4 acres of improved land and Canadian National and Canadian Pacific Railway sidings, with brick mill buildings containing approximately 110,000 square feet of manufacturing space. For full information and price, apply to

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*Manufacturers Record* **Baltimore, Md.**



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Second Hand and New Wrought Steel **PIPE** Overhauled New Threads and Couplings  
Also Cut to Sketch

**Greenpoint Iron & Pipe Co., Inc.**  
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Just Received  
100,000 FEET 1-INCH  
USED BLACK PIPE  
IN 20-FOOT LENGTHS  
Good Threads and Couplings; first-class condition

**MARYLAND PIPE AND STEEL CO.,**  
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**WANTED**

Steam boiler, 150 lbs. pressure, 400 H. P. for fuel oil, headroom incl. piping and breeching, 19 ft. or less.  
Engine-generator, 150 to 200 kw., d. c., 240 volts, 150 lbs. steam pressure, slide valve, Corliss or Uniflow.  
Steam boiler, 250 lbs. pressure, 400 H. P. for fuel oil, headroom incl. piping and breeching, 19 ft. or less.  
Turbine generator, 150 to 200 kw., d. c., 240 volts, 250 lbs. steam pressure.  
All in first-class condition. Give price, make, age and space required. No personal interview.

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339 N. Grove Street East Orange, N. J.

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Used and Rebuilt Engine Generator Sets, Turbo Generator Sets, Motors, Rotary Converters, Generators, Motor Generator Sets, Engines, Boilers, Steam and Electric Machinery of all kinds, also Machine Tools. Send for our new machinery list. Yours for the asking. Established 50 years.

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**GENERATOR**

200 KVA, 220 volt, 3 phase, 60 cycle, Burke generator direct connected to Filler-Stowell Uniflow engine.

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676 cubic feet capacity Ingersoll-Rand Imperial type 10xCB, size 15" and 9 1/4" x 12", 2 stage air compressor, short belt idler drive with 100 H.P. synchronous motor.

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4' Cincinnati Bickford plain radial drill S. P. drive.  
34" Aurora upright sliding head drill, motor drive.  
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**IF IT'S NEW PIPE OR SECOND HAND**

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Your inquiry means—Another satisfied customer.

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Large quantity new and used Government material in excellent condition, ready for immediate shipment. Low prices.

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Large stock of valves and fittings, screwed and flanged. Can make attractive prices.

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## EQUIPMENT FOR SALE

Nordberg-Carels Diesel Engine—No. 30173. Type 3VE. 330 B.H.P. Speed 225. 3 Cylinder.  
General Electric A.C. Generator—No. 2540617. Type ATL. Amps. 675. Speed 225. P.F. .8. Kw. 225. 60 Cycles. 281 kv-a. 240 volts.

**NEW ICE COMPANY**  
244 Boone Street Orlando, Florida

## BOILERS AT \$2.00 PER H. P.

Butt Strap, High Pressure, H. R. T. Boilers.

6—150 H.P. 150 lbs. steam pressure, Atlanta, Ga.  
3—150 H.P. 150 lbs. steam pressure, Augusta, Ga.  
2—150 H.P. 150 lbs. steam pressure, Nashville, Tenn.  
6—150 H.P. 140 lbs. steam pressure, River Falls, Ala.  
6—150 H.P. 130 lbs. steam pressure, Lake, Miss.  
2—Springfield water tube boilers, 242 H.P. each, 175 lbs. steam pressure, Nashville, Tenn.  
These boilers must be moved immediately. We guarantee insurance at above pressure. Write or wire for details.

**W. M. SMITH & CO.**  
Box 1709 Birmingham, Ala.

## Slashing Cut— Gregory Prices Lowest Ever!

Electric  
Motors

on a Money-Back  
Guarantee

Save Money. Buy Now at Rock Bottom. Your choice of tremendous stock—all standard makes, all sizes, a.c. & d.c. and all GREGORY HI-GRADE RE-BUILT "Good as New."

Send for 80 page Bargain Sheet  
**GREGORY ELECTRIC CO.**  
1601 South Lincoln St. Chicago

SATISFACTION

**ALBERT PIPE SUPPLY CO., INC.**

NEW-RECLAIMED-USED

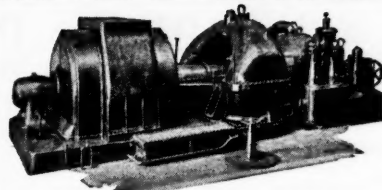
**PIPE**

ALL SIZES CUT TO SKETCH  
AND STOCKED

**BERRY & NORTH 13th STS.  
BROOKLYN, N.Y.**

GUARANTEED

SERVICE PRICES



10,000 KVA Turbo typical of 4 units recently delivered and similar to the following.

PRACTICALLY NEW 100% INTERNAL EXCELLENCE WESTINGHOUSE CONDENSING TURBO UNITS COMPLETE—INSTANT SHIPMENT

1—15,000 KW CW-218 Frame—1800 RPM  
1—10,000 KVA CW-118 Frame—1800 RPM  
1—7,500 KW CW-78 Frame—1800 RPM  
1—5,500 KVA CW-76 Frame—3600 RPM  
1—4,000 KVA CW-76 Frame—3600 RPM  
2—1,700 KVA CW-26 Frame—3600 RPM  
1—1,500 KVA CW-16 Frame—3600 RPM  
(3 phase, 60 cycle, standard voltages)

A.S.M.E. CODE DESIGN BOILERS 200-225 lbs.

2—1500 H.P. Cross Drum B & W  
2—2850 HP Ladd Bent Tube  
5—637 HP Stirling Plant, modern stokers, auxiliaries  
8—504 HP B & W Vertical Steel headers, et al.

CONDENSERS MOTOR GENERATOR SETS

Verification and proof of new equivalent condition easily reached on personal inspection  
50% to 200% saving on investment

Send us list of your requirements—or what you have for sale

COME TO CINCINNATI



## FOR SALE

1—100 H.P. Fairbanks Morse Semi-Diesel Oil Engine, style "V", 2 cylinder, vertical. Complete with accessory equipment. Comparatively new. Price \$1500.00, New Jersey shipping point.

**CONSOLIDATED PRODUCTS CO., INC.**  
14-16 Park Row New York City  
Barclay 7-0600

Machine Tools  
Power Equipment Boilers  
Electric Motors  
**DELTA EQUIPMENT CO.**  
148 N. 3rd St. PHILADELPHIA



# RAILROAD AND CONTRACTORS' EQUIPMENT



## SLIGHTLY USED

Equipment of all kinds, located throughout the United States, is listed with me for sale. Let me know what you need, no matter what it is, and I will send you description, quote prices and give locations of the Bargains in your territory. Some of the principal items listed, are:

BARGES	DERRICKS	MIXERS
BOATS	DRAUGHTS	MOTORS
BUCKETS	DREDGES	PULVERIZERS
BOILERS	DRILLS	PIPE
CABLEWAYS	ENGINES	PUMPS
CARS	EXCAVATORS	RAIL
COMPRESSORS	ELEVATORS	SCALES
CONVEYORS	HOISTS	SLACKLINES
CHANNELERS	GENERATORS	SHOVELS
CRANES	KILNS	TRACTORS
CRUSHERS	LOADERS	TRUCKS
DRYERS	LOCOMOTIVES	ETC.

I Can Sell Your Surplus Equipment

**ALEXANDER T. McLEOD**

First National Bank Bldg. CHICAGO, ILL.

## STEEL SHEET PILING

New and Used

SOLD, BOUGHT, REPURCHASED

Stocks at Principal Points throughout the Country for prompt shipment. We buy Piling located anywhere.

**HYMAN-MICHAELS COMPANY**

St. Louis CHICAGO New York  
Houston San Francisco Seattle

## 27E LEACH PAVER FOR SALE

Used Less Than 30 Days  
Perfect Condition—Special Price

**MOORE-HANDLEY HARDWARE CO.**  
5-20th Street Birmingham, Ala.

## GASOLINE LOCOMOTIVES FOR SALE—At Half Price

Three new 8 ton Whitcomb gasoline locomotives, narrow gauge, can be changed to standard gauge. These locomotives are new, unused and are in absolutely perfect condition.

**W. M. SMITH & CO.**  
Birmingham, Alabama





## RAILROAD AND CONTRACTORS' EQUIPMENT



### For Bigger Profits In 1931!

*Use an E. E. D. Rebuilt Excavator*

—BUY or RENT WITH OPTION TO PURCHASE—

**P&H Model 400** Dragline,  $\frac{3}{4}$  yard, in good shape, ready to go. Located at Chicago plant.

**Northwest Model 105** 1 yard Crane. Fully reconditioned. At Hoboken plant.

**P&H Model 600** 1 yard Shovel. Thoroughly overhauled and in very good operating condition. At Hoboken plant.

**Marion No. 32** 1 Yard Steam Shovel on full crawlers. Ready for immediate delivery. An exceptional bargain, located at Hoboken plant.

**P&H Model 400**  $\frac{3}{4}$  yard Clamshell, 35 foot boom. Has been very carefully reconditioned. At Hoboken plant.

**Erie Gas-Air**—1 yard Shovel or Crane. In good working order. Will sell cheap. At Chicago plant.

Liberal Terms—Large Stock to Pick From—Write or Wire At Our Expense

## EXCAVATING EQUIPMENT DEALERS, INC.

Hoboken, N. J., Los Angeles, Cal., Berkeley, Cal., West Allis, Wis., Chicago, Ill.,  
1706 Willow Ave. 2243 E. 37th St. 2657 Ninth St. 5905 Greenfield Ave. 1040 W. Division St.



*If you attend the Road Show*

### VISIT US AT OUR BOOTH

SPACE A-28

*or write our nearest office for details on our*

RENTAL or SALES PLANS on Rebuilt Equipment

### Equipment Corporation of America

1166 So. Washtenaw Ave., Chicago, Ill.  
866 Horn Bldg., Philadelphia  
666 Empire Bldg., Pittsburgh

### RELAYING RAILS — SWITCHES TRACK MATERIAL

THE PERRY BUXTON DOANE CO.  
P. O. Box 5253 Boston, Mass.

50 TONS  
100 LB. RELAYING RAILS  
150 TONS  
80 LB. RELAYING RAILS  
HENRY LEVIS & COMPANY  
Commercial Trust Bldg. Philadelphia

### RAILS NEW & RELAYING ALL WEIGHTS

Let us know your needs. We may have material in stock near you.

WE BUY RAILS FIT TO RE-LAY  
ROBINSON & ORR

Columbia Bldg., 248 Fourth Ave., Pittsburgh, Pa.  
New Frogs and Switches at low prices.

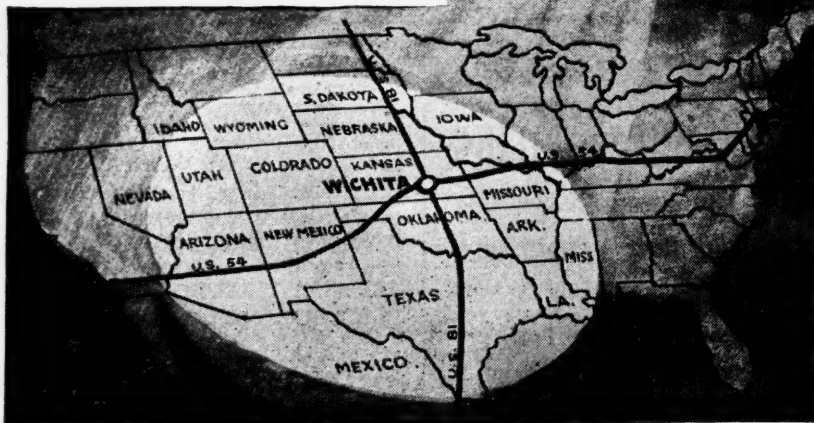
### FOR SALE

P. & H. Model 206,  $\frac{3}{4}$ -yd. Dragline.  
Byers, 10-ton Caterpillar Crane,  $\frac{3}{4}$ -yd. Clam.  
O. & S. 22 $\frac{1}{4}$ -ton Loco. Crane 50' Boom.  
16—12-yd. Western Steel Beam Dump Cars.  
10—50-ton capy. All Steel Twin Hopper Cars.  
75-ton, 20x28" 6-Driver Switcher, A. S. M. R.  
50-ton, 18x24" 6-Driver Switcher.  
92-ton, 20 $\frac{1}{2}$ x28" Mikado (3-8-3) BUILT 1922.  
35-ton, 18x20" 4-Driver Ssd. Tank.  
56-ton, 18x24" 4-Driver Ssd. Tank.  
WE HAVE OVER FORTY LOCOMOTIVES IN  
STOCK. REBUILT AND READY  
ALL TYPES. 10 TO 100 TONS

Southern Iron & Equipment Co.,  
Atlanta, Ga.

Sixth Annual  
Southwest Road Show & School  
Wichita, Kansas  
February 24 to 27, 1931

Covers More Than 14 States  
Southwest's Largest Assembly of  
Men, Machinery and Materials  
Complete data sent upon request



### Shovels or Cranes For Sale

1—Factory rebuilt Lima  $\frac{1}{4}$  cu. yd. capacity. This machine can be equipped with either shovel, clamshell, dragline or drag shovel attachments. Very reasonably priced. Carries new machine guarantee. Located at Lima, Ohio.

1—B-2 Erie Steam Shovel, 1 cu. yd. capacity, in very good condition. Located in New Jersey.

Marion No. 32 Electric shovel  $\frac{1}{4}$  cu. yd. 50 H.P. G.E. motor; 3 phase 60 cycle 440 V. Splendid condition. Located New York City.

Complete shovel attachment for Type "O" Thew located Buffalo, N. Y. Also attachment for Type B and B-2 Eries located in New Jersey. Decided bargains.

Osgood steam shovel and crane of  $\frac{1}{4}$  yd. capacity. Very good condition, located New York City.

1—Linn Tractor, 6-yd. capacity, with Waukesha Motor. Machine in very good condition. Priced to sell quickly. Located New York State.

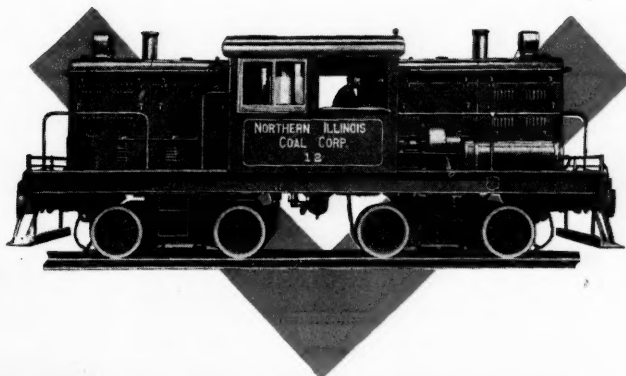
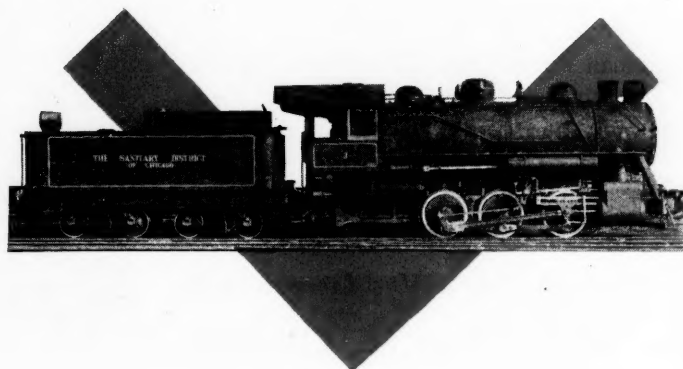
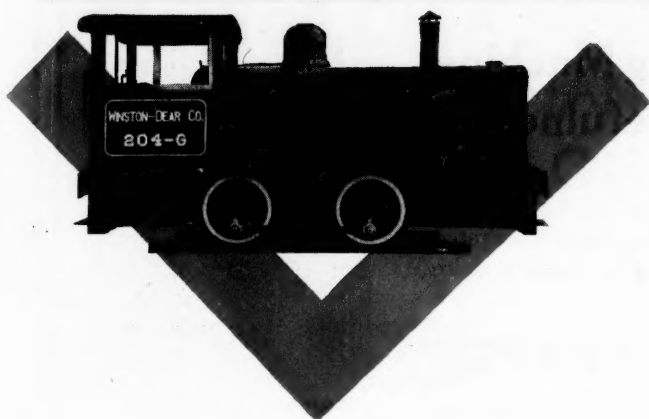
We have both Steam and Gasoline Excavators ranging from  $\frac{1}{2}$  to  $1\frac{1}{2}$  cu. yd. capacity in various parts of the country that will be sold at extremely low prices or leased with leased payments made applying on purchase price.

### LIMA EXCAVATOR SALES AGENCY

Lima, O., Office.  
Lima Trust Bldg.  
Tel. Main 4824

New York Office:  
2351 Graybar Bldg.  
420 Lexington Ave.  
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Wire or phone at my expense.



# Why PORTER ?

**P**ORTER gives you a 100 per cent choice in locomotives... steam, gasoline-electric or gasoline . . . whatever type or size is best suited to your particular haulage requirements . . . time-tried and time-proved in design and construction . . . incorporating the traditional PORTER standards of craftsmanship which have made PORTER Locomotives world-renowned . . . these are a few reasons why PORTER popularity is world-wide . . . why there are more PORTERS in industrial service than all others combined.

**H. K. PORTER COMPANY**  
**Pittsburgh, Penna.**

*Established 1865*

*New York Office: 44 Whitehall Street*

*Chicago Office: Engineering Bldg., Wells Street & Wacker Drive*

**Builders of STEAM, FIRELESS STEAM, GASOLINE-ELECTRIC — OIL-ELECTRIC, GASOLINE and COMPRESSED AIR LOCOMOTIVES**





## An Economical Earth-Moving Machine With a Wide Range of Usefulness

FOR digging gravel from a bank, making a cut-and-fill, grading rough land, or doing any work where material has to be excavated and hauled a distance of several hundred feet, there is no machine quite the equal of

### The SAUERMAN DRAG SCRAPER

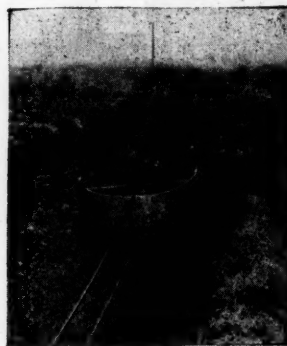
Excavating and conveying are merged into one when you use this machine. Your equipment investment is less, your operating expense is less.

One man operating a Sauerman Power Drag Scraper will dig and move 150 to 4,000 cu. yds. of earth materials per 10-hour day, these figures representing the capacity range from the smallest portable units to the big Sauerman stripping and levee-building machines equipped with scraper buckets which take 10 cu. yds. at a "bite." Write for 96-page catalog.

See our exhibit at the Road Show, St. Louis, Mo., January 12-16

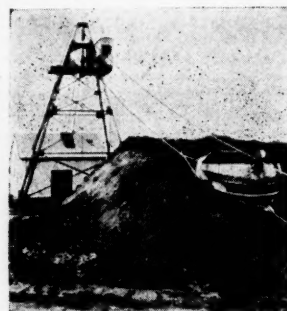
SAUERMAN BROS., Inc., 468 S. Clinton St., CHICAGO

# SAUERMAN



**GRADING A HIGHWAY**

The above illustration shows a Sauerman Drag Scraper making a long cut-and-fill for a road.



**HEAVY EARTH-HANDLING**

This shows a Sauerman installation with self-propelling head tower—a popular type of machine for canal and embankment work. This photograph was taken on a Mississippi River levee project.

**CARS KOPPEL TRACK**

KOPPEL

KOPPEL INDUSTRIAL CAR EQUIPMENT

**INDUSTRIAL CAR EQUIPMENT**

THE ATLAS CAR & MANUFACTURING CO.  
Cleveland, Ohio

**WHITCOMB LOCOMOTIVES**

2 to 100 TONS  
GEAR DRIVE AND OIL-ELECTRIC  
GASOLINE - DISTILLATE - DIESEL - BATTERY  
Write for Bulletins and Performance Data  
GEO. D. WHITCOMB CO.  
ROCHELLE, ILLINOIS

**EASTON CARS**

for every industrial purpose  
Any type to your or our design  
EASTON CAR & CONSTRUCTION CO.  
10 E 40th Street, New York City EASTON, PENNA.  
PHILADELPHIA PITTSBURGH CHICAGO

**ERIE STEEL CONSTRUCTION COMPANY**

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Steel Storage Bins  
ELECTRIC CRANES  
CLAMSHELL AND ELECTRIC BUCKETS

**Hayward Buckets**

A bucket for every digging and rehandling need . . . A size for every job.  
THE HAYWARD CO., 50-52 Church St., N. Y.

**SEAWALLS WEBER SYSTEM**

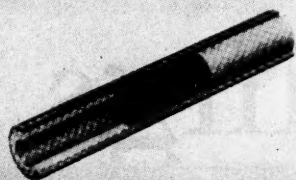
MANY DIFFERENT TYPES TO MEET EVERY CONDITION  
SAFEST AND MOST PERMANENT CONSTRUCTION  
ENORMOUS SAVING OF COST  
FOR COMPLETE INFORMATION WRITE TO:  
SHORE-LINE BUILDERS, INC.  
JACKSONVILLE, FLORIDA.  
WEBER SYSTEM BULKHEADS

**BUCYRUS ERIE**

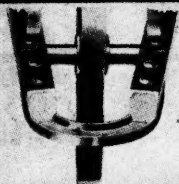
KNOWN RELIABILITY!  
Bucyrus-Erie equipment is known the world over, for dependable, low-cost operation. Shovels, Draglines, Cranes—all sizes—Gas, Diesel, Electric, Gas + Air, Diesel + Air, Steam. Also Railway Cranes, Spreader Plows, etc.  
Write for bulletins.  
BUCYRUS-ERIE COMPANY  
So. Milwaukee, Wis., Evansville, Ind., Erie, Pa.

SHOVELS  
CRANES  
DRAGLINES  
DREDGES

# *Sterling* ON A WHEELBARROW MEANS MORE THAN STERLING ON SILVER



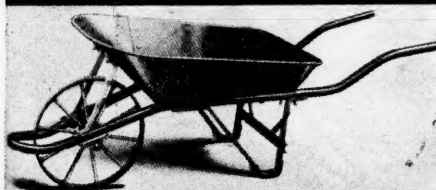
★ SELF-LUBRICATED AXLE BEARINGS  
NO OILING NEEDED WHEELS 50% EASIER



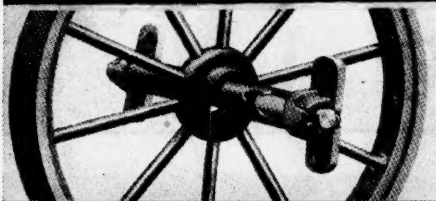
★ MALLEABLE IRON WHEELGUARDS INSURE  
PROTECTION AND EASIER, QUICKER DUMPING



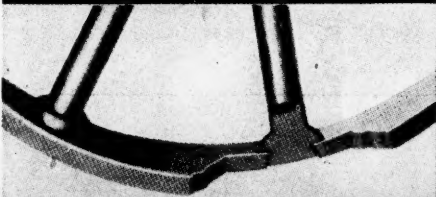
★ "V" SHAPED STEEL TRAY BRACES—  
GREAT STRENGTH—CAN'T TWIST



★ SCIENTIFIC DESIGN—PERFECT BAL-  
ANCE—STRENGTH—LIGHTWEIGHT



★ 10-SPOKE WHEEL INSTEAD OF 8—  
50% MORE TONNAGE—LAST LONGER.



★ SMOOTH TREAD FLUSH RIVETED SPOKES  
—TRAVELS SMOOTHER, QUICKER.



## 5 FACTORS of LOWERED COSTS

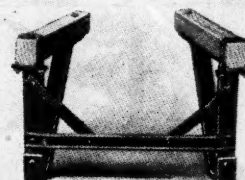
Each feature of the Sterling Wheelbarrow is not just a conventional "selling claim" but a real contributing factor to Lowered Operating Costs, in

- 1 MORE LOADS WHEELED  
More loads wheeled per man per day.
- 2 INCREASED MANPOWER  
Increased manpower through perfect load balance.
- 3 LOWERED MAINTENANCE  
Lowered maintenance costs, all parts stronger, last longer—and interchangeable.
- 4 RAISED EFFICIENCY  
Raised efficiency through adaptability—exact sizes and capacities for every job.
- 5 PROMPT SERVICING  
Prompt servicing and delivery to the field of work.

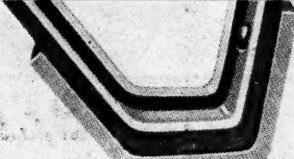
*Send for Complete Details!*



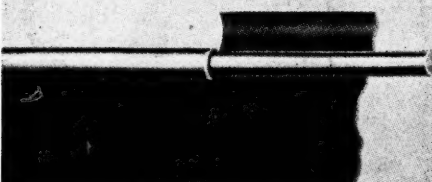
★ 8 BRANCH OFFICES AND WAREHOUSES—  
COMPLETE STOCKS—PROMPT DELIVERY.



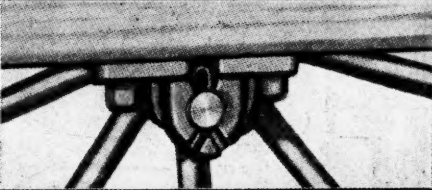
★ "V" BRACED CHANNEL STEEL LEGS,  
RIVETED—MAXIMUM RIGIDITY.



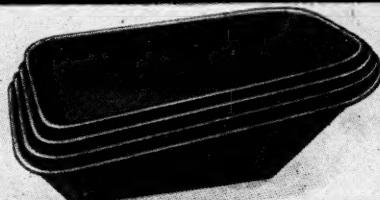
★ REPLACEABLE SQUARE BENT LEG  
SHOES—TWICE THE LIFE.



★ TOP EDGE OF TRAYS REINFORCED BY  
ROD—HOLDS SHAPE—TAKES JARS.



★ ROUND SMOOTH AXLE—KEYED IN  
PLACE TO MALLEABLE BRACKETS.



★ EXACT SIZES OF TRAYS, FOR EVERY JOB  
—STANDARDIZED, INTERCHANGEABLE.



★ STANDARDIZED HANDLES—STEEL OR  
MAPLE—ALL INTERCHANGEABLE.

# STERLING WHEELBARROW COMPANY

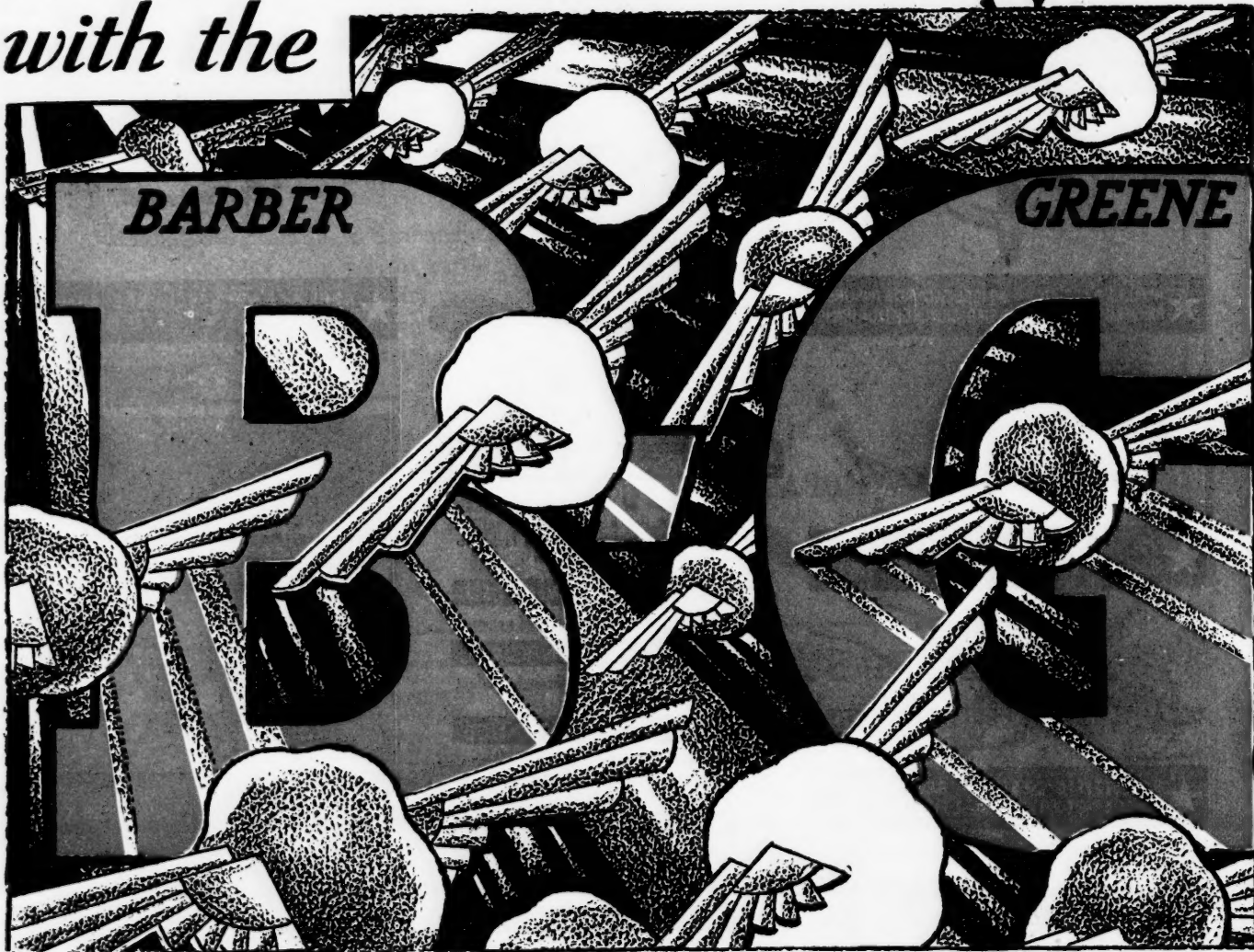
MILWAUKEE

WISCONSIN

BRANCH WAREHOUSES—BOSTON, NEW YORK, PHILADELPHIA, PITTSBURGH, CLEVELAND, DETROIT, CHICAGO, ST. LOUIS



# Wings to Stone and Other Things *with the*

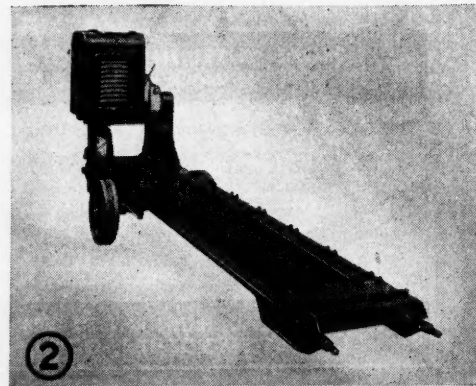
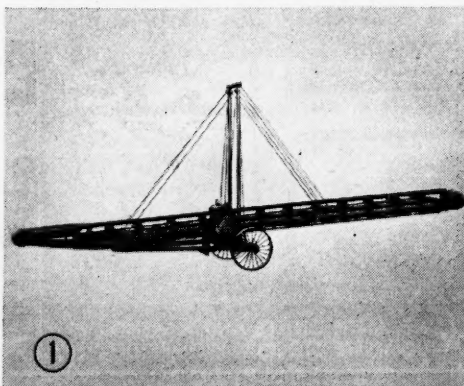


1 Barber-Greene Portable for handling wet concrete or any bulk materials.

2 Barber-Greene Portable and Belt Car Unloader unloads aggregates from hopper cars.

3 The New Barber-Greene Model "62" Loader—62 cu. ft. per minute. Can be had with weigh hopper or high frequency vibrating screen.

4 Barber-Greene Permanent Conveyor built up of standardized frame sections.



# BARBER

560 West Park Avenue



## A Basic Material Moving Principle • • • the Stream that Almost Flows by Itself • • • • •

The Barber-Greene Idea is a basic bulk material handling principle that swells yardages and cuts costs on unloading, storing, reloading and similar jobs.

The Barber-Greene Idea approaches, very closely, the ideal of making stone and similar things fly from where they are to where you want them.

A simple continuous belt or bucket line is the only basic material moving machinery.

There is no staggering number of pounds to be moved with the material—and there is no complicated heavy gearing, no tons of castings, no huge, gas-gobbling horse-powers.

Material movement is simple, direct, in a fast-moving stream—that almost flows by itself.

Such basically simple machines can be finely engineered and finely built—at prices far, far below these other methods. And constant application of Barber-Greene Idea has developed a line that meets practically any material moving application.

Ask for the Barber-Greene Line Book. It indicates possible savings that Barber-Greene can effect for you.



# GREENE

Aurora, Illinois

Standardized Belt Conveyors	Portable Belt Conveyors
Portable and Self-propelled Flight Conveyors	
Self-propelled, Self-feeding Bucket Loaders	
Flight and Belt Car Unloaders	Snow Loaders
Light and Heavy Duty Ditchers	



# Brick Pavements

Low upkeep . . . Long  
life . . . Imperviousness  
to weather and climate  
. . . Certainty of good  
construction . . . Easy  
riding . . . Attractive



**W**HEREVER comparative costs are kept, the practical economy and wisdom of brick surfaced roads and streets is borne out.

For complete information address National Paving Brick Manufacturers Association, 1245 National Press Building, Washington, D. C.

*We produce in quantities to meet your requirements*

## SAND and WASHED GRAVEL

**Q**UICK shipments by rail from Baltimore and North East, Md. or in scow and barge lots. Truck or rail shipments from Baltimore, Md.

### The Arundel Corporation

MAIN OFFICE: ARUNDEL BUILDING  
BALTIMORE, MARYLAND

Branches: New York, Norfolk and Miami

## SAND—GRAVEL—BRICK FILTER GRAVEL

Washed Sand and Gravel for Concrete  
Roads and Buildings

Filter Gravel, all sizes—Building Bricks

FRIEND & CO., INC. River St., Petersburg, Va.



for economy and perma-  
nence in Road Building and  
General Construction

**WOODSTOCK SLAG CORP.**

Southern Railway Bldg., Birmingham, Ala.

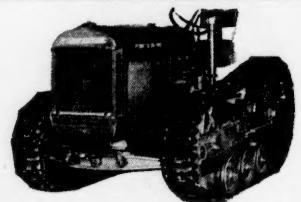
**Crushed Stone  
Mascot Chatts Roofing Gravel  
Asphaltic Roadway Gravel  
Asphalt Filler Dust**



AMERICAN LIMESTONE COMPANY  
KNOXVILLE TENNESSEE

**Lower  
Hauling Costs**

**Mean Bigger  
Profits**



**H**ERE is sure-footed power to do your work quickly and cheaply regardless of ground or weather conditions. Write for bulletin covering your work.

**Trackson Company**

FULL-CRAWLERS & TRACTOR EQUIPMENT  
1325 South First St. Milwaukee, Wis.



**MODEL 411**



**HAND  
HELD  
DRILLS**

**LIGHT WEIGHT**

**POSITIVE ACTING STEEL PULLER**

**POWERFUL BLOWING DEVICE**

**GARDNER-DENVER COMPANY**  
QUINCY, ILLINOIS

*Branch Offices in all Principal Cities*

HHD-2

**GARDNER-DENVER**



# New Sullivan Equipment

at the road show  
will point the way  
to a profitable 1931

1931 will be a good year for alert road builders. And many contractors will study exhibits at the Road Show, for means of reducing estimates and increasing profits.

Three of the eight Sullivan Vibrationless compressors will be on exhibit. They are becoming the standard source of dependable air power.

A Sullivan Portable All-Hammer drill sharpener will make precision bits and shanks for the crowd which always gathers about it.

New concrete breakers and rock drills—a new anti-freeze system for pneumatic tools—new Stringalite portable lighting cable—a pavement core drill—and a Turbinair hoist will be on

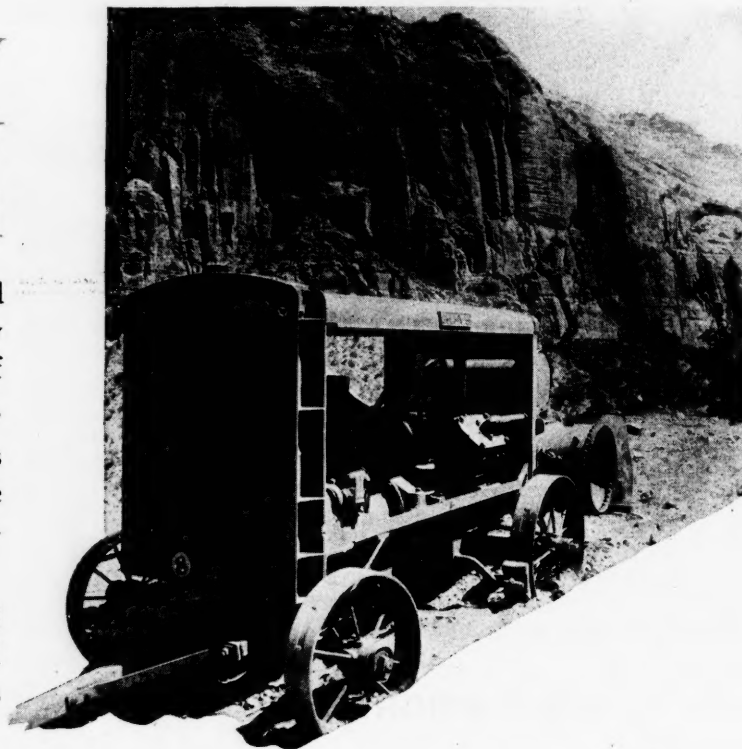
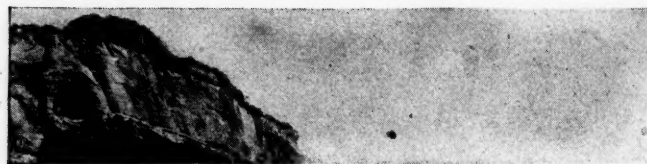


exhibit in the Sullivan Booth, B-39, in the north end of the west building.

See these products at the Show, or send for the Sullivan Road Show Bulletin.



**NEW SULLIVAN BUSTERS**

Three new Sullivan Busters will be on display in St. Louis. Also Spaders, and several Rock Drills. These tools will be operated in the booth.



Sullivan Pavement Tester at Work



**TANNER-TANK ANTI-FREEZE**

Don't fail to see the new Tanner Tank. It absolutely prevents freezing of tools or air lines at 40 degrees below zero. It peps up tools in warm weather. Obviates need of fires on air lines, and alcohol dripping.

Bulletin on request.

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Birmingham, Ala.  
Boston, Mass.  
Butte, Mont.  
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Eighty Stocks in North America

# SULLIVAN

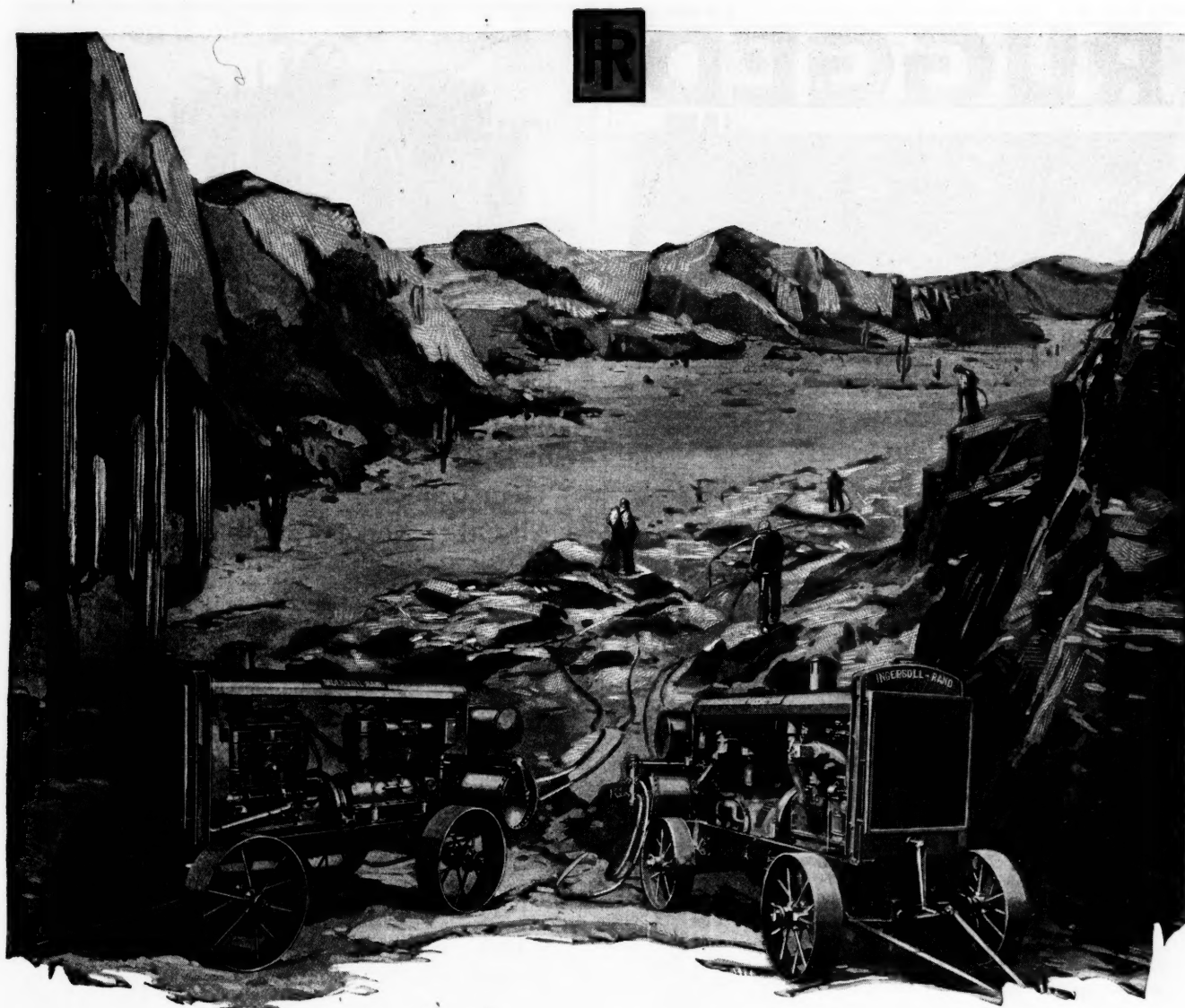
Sullivan Machinery Company

718 Wrigley Bldg., Chicago

30 Church St., New York

#### Sullivan Offices

Los Angeles, Calif.  
Muskogee, Okla.  
New York  
Pittsburgh, Pa.  
Pottsville, Pa.  
Salt Lake City, Utah  
San Francisco, Calif.  
Scranton, Pa.  
Spokane, Wash.  
St. Louis, Mo.  
Terre Haute, Ind.  
Toronto  
Vancouver



## Wherever You Go You See Them

Through the desert, over the mountains, across the plains—wherever the trail leads—you will find I-R Portable Compressor outfits in use on the road-building projects of State and Nation.

Miles of fine, paved highways are now being carried through bar-

ren and rugged country which was formerly considered impassable. Ingersoll-Rand Portable Compressors, "Jackhammer" Drills, and Pneumatic Tools have played a tremendous part in these undertakings by lowering costs and speeding the work.

*See these compressors and tools at Booths B-54 and B-69, St. Louis Road Show, Jan. 10-16, 1931*

INGERSOLL-RAND COMPANY - 11 Broadway - New York City

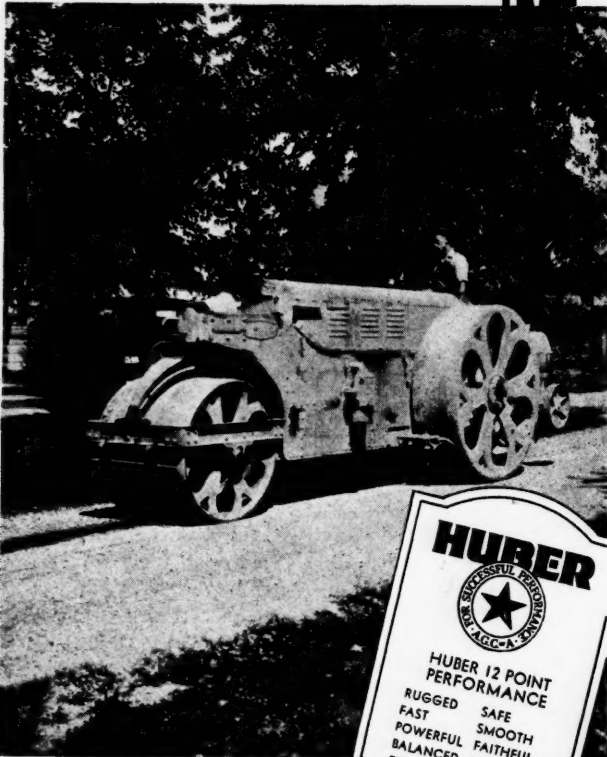
*Branches or distributors in principal cities the world over*

# == Ingersoll-Rand ==

PORTABLE AIR COMPRESSORS



# RUGGED

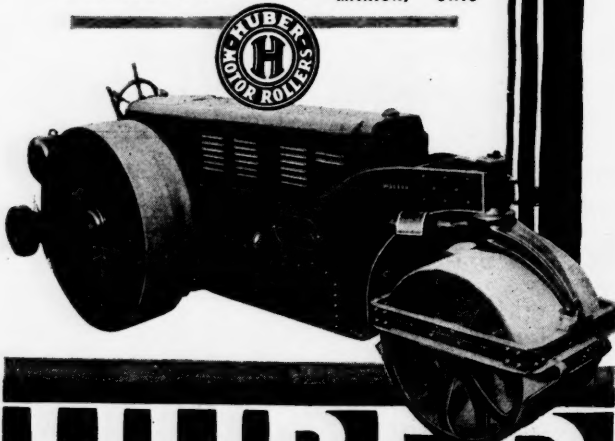


Huber 10 Ton Road Roller owned by Van Wert County, Van Wert, Ohio.

## ALWAYS "ON TOP" OF YOUR TOUGHEST ROAD JOBS

HERE is a Roller that is built from the ground up, a rugged, powerful road construction tool that can take the hardest knocks of any job and come through with more work to its credit, in less time, at a lower cost than any other roller. Built from 5 to 14 tons. Write for new Huber Catalog.

THE HUBER MFG. CO., 310 E. Center St. MARION, OHIO



# HUBER

## MOTOR ROLLERS



Responsible  
for More Miles  
of Durable Pavement  
Than Can Be Credited to  
All Other Makes Combined

Buffalo-Springfield rollers hold this distinction because they embody the finest features of design and construction known to specialized roller manufacture.

Because they have a reserve of power and stamina far beyond the usual road construction or maintenance requirement.

*Built in a wide range of sizes. Steam and motor driven. Scarifier and other attachments optional.*

The Buffalo-Springfield Roller Co.  
Springfield, Ohio

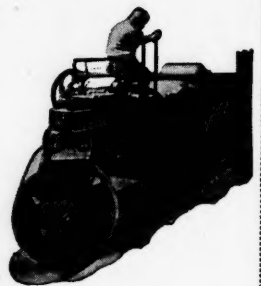
## "No honeycombing— and a smooth even pavement"

Contractors write us that there's no sinking or bridging with an Erie Roller.

The reason is plain: The Erie compacts the asphalt uniformly because  $\frac{3}{4}$  of the weight of this roller is concentrated over the compression roll.

Roll the job with an Erie and your margin of profit is larger. Write today for Bulletin "M."

ERIE MACHINE SHOPS  
Erie, Pa.

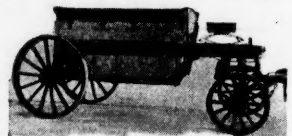


**ERIE ROLLERS**  
SAME HIGH QUALITY

## DUMP WAGONS, TEAMING GEARS AND CARTS

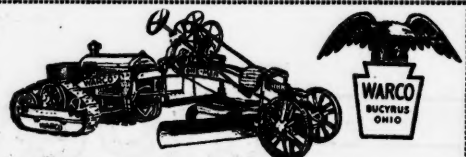
Teaming gears have  $3\frac{1}{4} \times 10$  and  $3 \times 9$  thimble skein axles, heavy hounds and bolsters,  $3 \times \frac{1}{2}$ " tires, 36-36 or 36-40 wheels.

HACKNEY WAGON  
COMPANY  
WILSON, N. CAROLINA



Bottom Dump Wagon  
Modern Construction

Graders  
Crawlers  
Scoops



W.A. RIDDELL CO. BUCYRUS, O.

# **JUST WHAT DO YOU WANT A CLAMSHELL BUCKET TO DO?**

**If Your Demands Are  
Here . . . You'll Want  
To Know More About  
An Owen . . .**

If you want a bucket that will tackle every job you give it, and get through with it in the shortest time—

If you want a bucket that digs straight down, deep into the material, grabs a capacity load every time, dumps clean—with no waste motion—

If you want a bucket that does a "bigger day's work than any other bucket of the same weight and capacity" and that, assured by positive guarantee—

If you want a bucket that stands up under hard work with no breakage, and that gives longer life—

If you want a bucket that pays for itself in time saved and extra yardage—

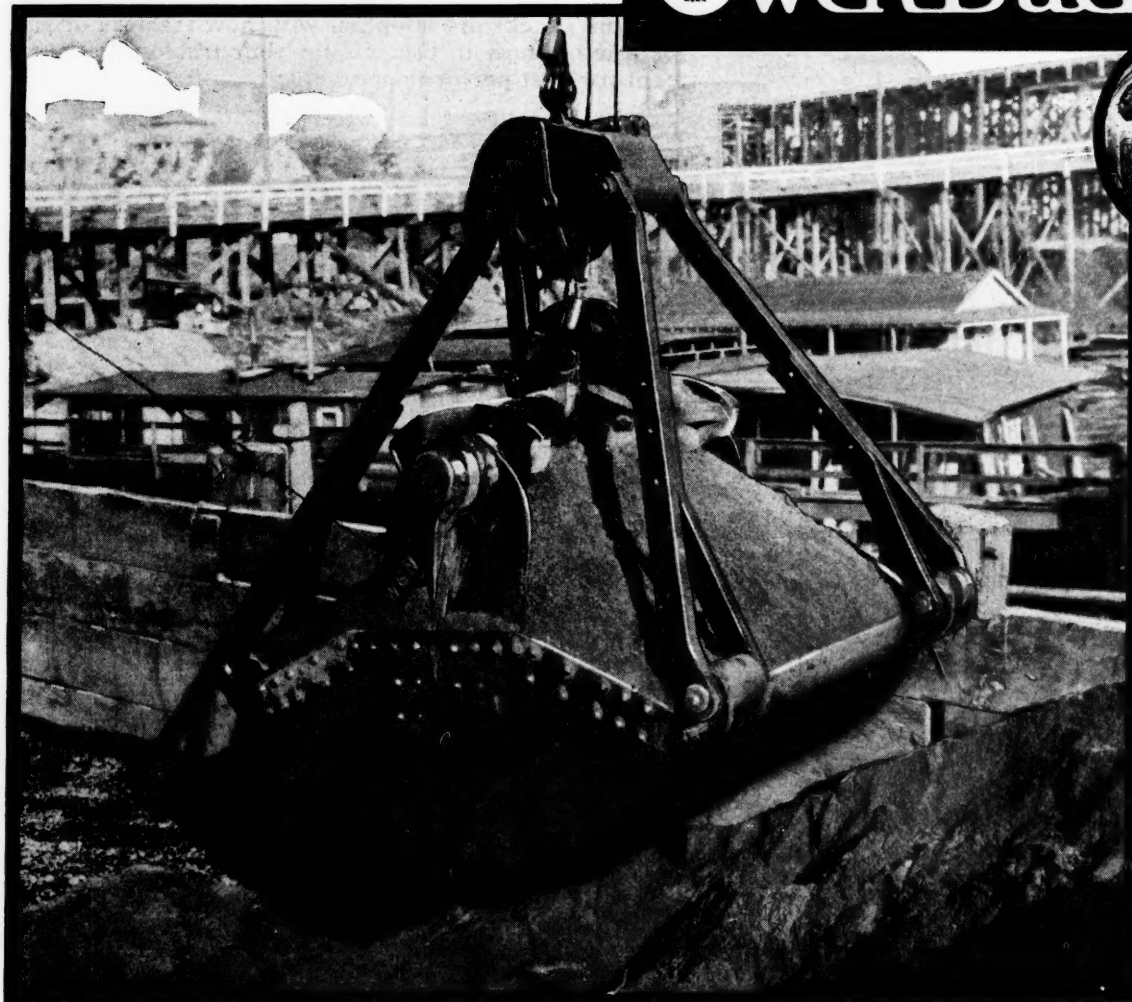
*You'll want an Owen*—because Owen Buckets are making good in all of these requirements for satisfied owners, everywhere.

Get down the particular kind of work a clamshell bucket must do for you and we'll send you some valuable data on the Owen that will pay for itself doing it for you.

The Owen Bucket Co. 6015 Breakwater Ave., Cleveland, O.



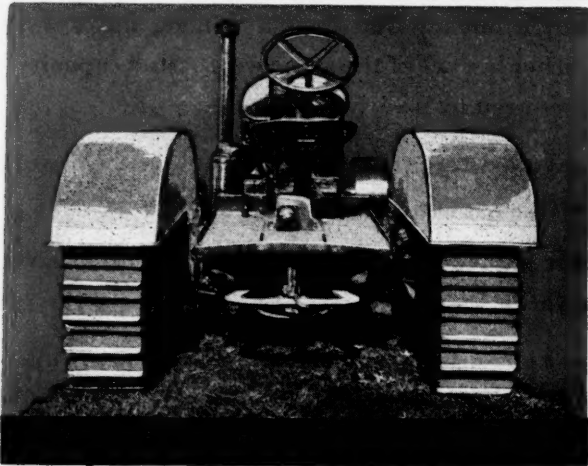
## **Owen Buckets**



**A  
MOUTHFUL  
AT EVERY  
BITE**



# POSITIVE TRACTION..



Proved Performance  
with

## MOON TRACKS

Moon Tracks materially increase the draw-bar pull of wheel tractors at every stage of the highway industry—construction—maintenance and snow removal. This new semi-crawler principle delivers all the engine power at the draw-bar all the time. Free individual track oscillation keeps each track continuously in full contact with the ground.

Moon Track-equipped tractors pull elevating graders, scrapers, scarifiers and trailers—they push snow plows, bulldozers and backfillers—they operate winches, power shovels, stump pullers and many other pieces of equipment—all at reduced operating costs.

Rough going, embankments, and steep obstacles of any sort in the road or fill are all the same to Moon Track-equipped tractors. Their positive traction assures completing the job.

Moon Tracks are supplied with new tractors or for tractors now in use. Equip your tractors with them for best performance.

*See the Moon Track Exhibit in Booth A-31 at the Road Show, St. Louis, January 10 to 16.*

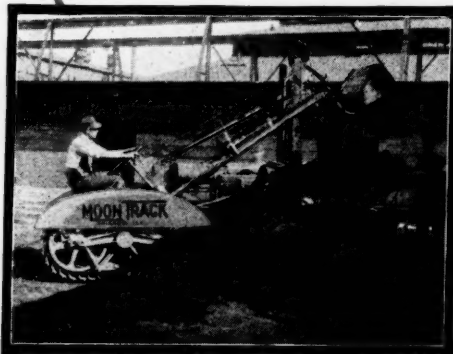
## MOON TRACK COMPANY

Dept. M. R.

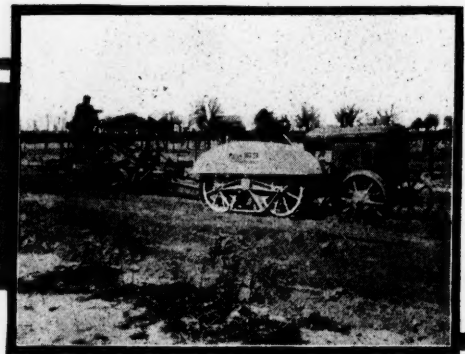
1822 McCormick Bldg.

Chicago

Illinois



Moon Tracks are available  
for  
McCormick-Deering  
Allis-Chalmers  
and Case Tractors

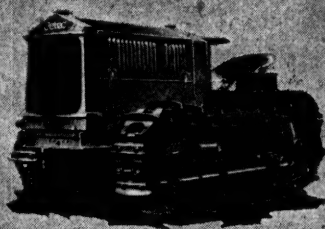


# CLETRAC

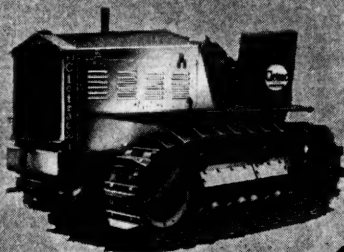
## CRAWLER TRACTORS



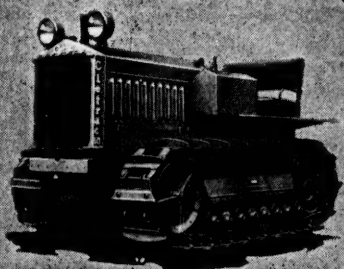
The CLETRAC ? ? ?

**NEW**

The CLETRAC "20"



The CLETRAC "40-30"

**NEW**

The CLETRAC "40"



The CLETRAC "80-60"

**N**EVER before in a single tractor line has there been offered so extensive an array of industrial power units as you find in the 1931 Cletrac line-up. With a power range up to a maximum delivery of 80 h.p. in the big 80-60, the line meets fully every power need in road and general contract work. Up-to-the-minute in every mechanical detail — rugged as tough steels and sound design can make them — dependably powered with the most modern of tractor motors — these Cletracs offer unquestionably the greatest values from which to select your 1931 tractor equipment.

- Automatic lubrication on all models
- Exclusive, planetary gear steering
- Remarkably low oil and gas consumption

See the Cletrac full line exhibit at the ROAD SHOW. The new smaller Cletrac with its marked advantages for small horsepower jobs — the new Cletrac "40-30" with its trim lines and superb performance — the Cletrac "20" — the old, trusty "40" — the incomparable "80-60" — all of these will be there to give you at first hand a complete picture of how Cletrac can serve you.

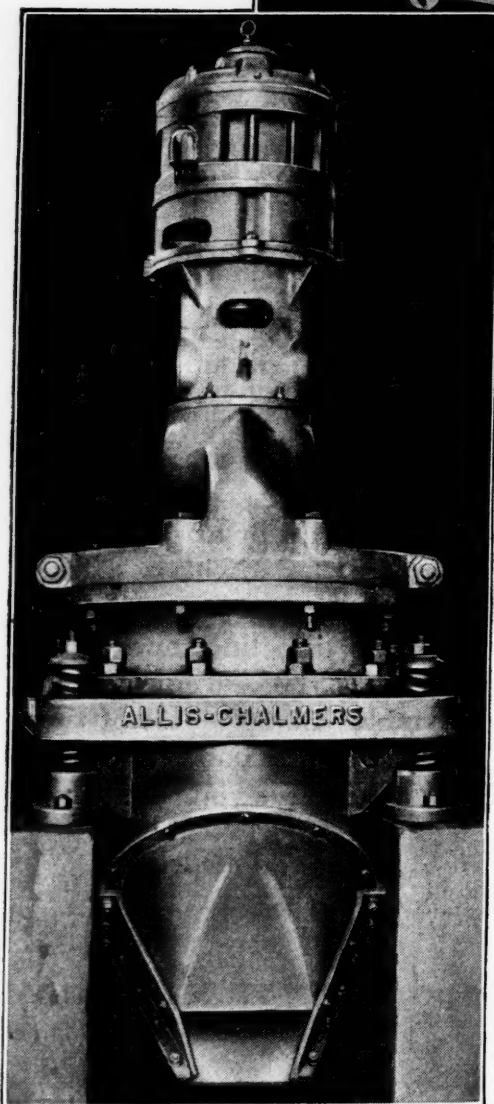
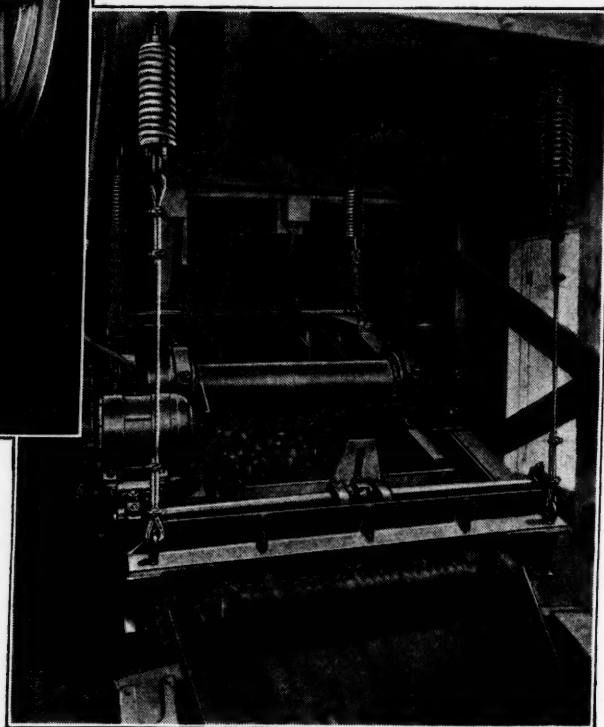
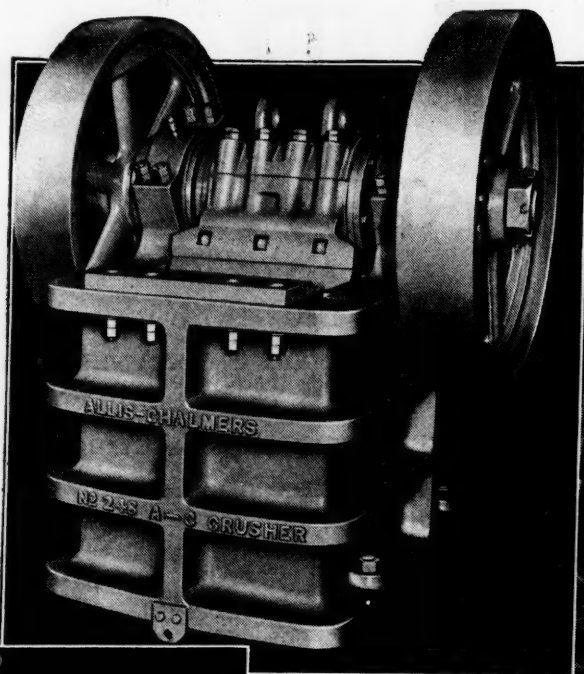
*Literature on any or all models  
will be mailed on request.*

The Cleveland Tractor Company  
19333 Euclid Avenue Cleveland, Ohio

### AT THE ROAD SHOW

you will find the Cletrac Exhibit in Building "A" in adjoining spaces 24 and 44, January 12 to 16, at St. Louis.





## At the St. Louis Conventions

**American Road Builders—Jan. 12-16 incl.**

**National Crushed Stone—Jan. 19-22 incl.**

**National Sand and Gravel—Jan. 27-29 incl.**

Allis-Chalmers will have an operating exhibit consisting of a 5' Newhouse Crusher, a 3'x 6' Centrifugal Vibrating Screen, and a 24'x 8' Fine Reduction Jaw Crusher.

The Newhouse Crusher with its direct connected motor drive is built in 5, 7, 10, and 14-inch sizes. It has a short rapid crushing stroke, giving large capacity, uniform product and high reduction.

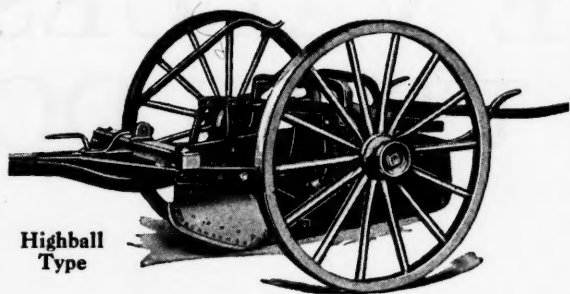
Centrifugal vibrating screens, built in 3'x 6', 4'x 8' and other sizes as required, with single, double and triple decks, are of the positive throw eccentric type, the motion being equal over the entire screen surface.

The new 24'x 8' Fine Reduction Jaw Crusher makes it possible, within certain limits of capacity and reduction, to produce in a single operation a finished product that ordinarily could only be obtained by using a primary breaker followed by a finishing machine such as crushing rolls.

See these machines in operation at the Park Ave. (St. Louis) plant of the General Materials Corp. Allis-Chalmers representatives will arrange for transportation to the plant. Get in touch with one of them.

# ALLIS-CHALMERS

— Allis-Chalmers Manufacturing Company, Milwaukee —



Highball  
Type

## HARRIS ROAD EQUIPMENT

Road Plows

Rooter Plows

Road Drags

Drag Scrapers

Wheel Scrapers

Fresno Scrapers

## RUSSELL

Replacement Parts

and

Repair Parts

for

Russell Road Equipment

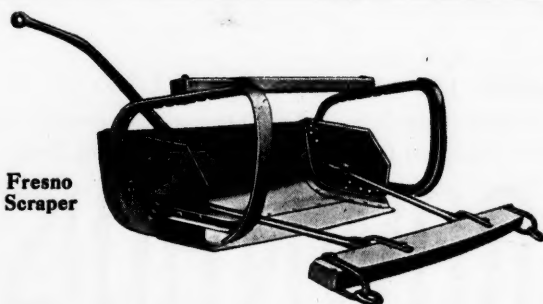
## B. W. & LEO HARRIS CO.

*Manufacturers*

Minneapolis

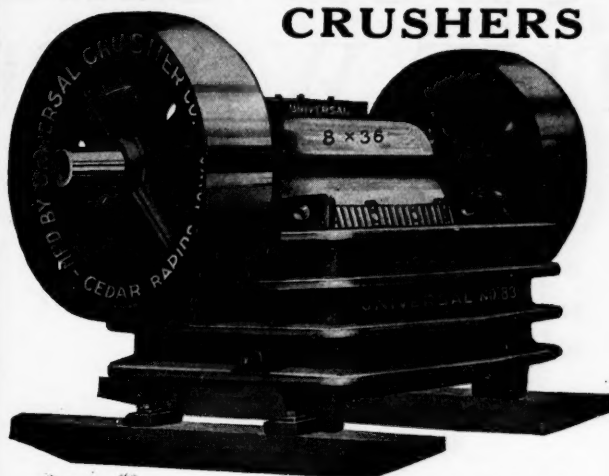
Minnesota

*Write for Catalog No. 30*



Fresno  
Scraper

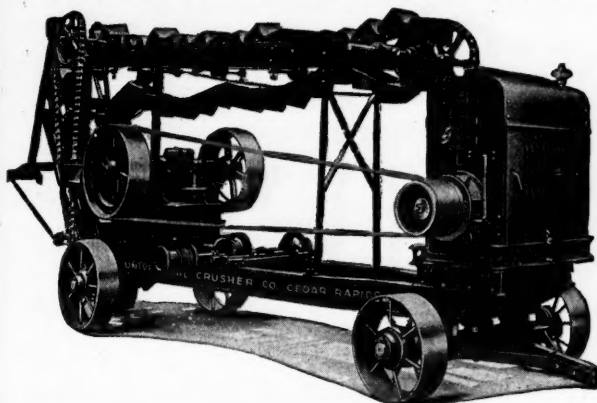
## UNIVERSAL CRUSHERS



Popularly used, both for *primary* and *secondary* crushing, in stone quarries, gravel pits, mines, brick and tile plants; for state, county, and municipal road building; by road and construction contractors; in fact, wherever a crusher is needed.

*Made in 26 sizes. Capacities up to 450 tons a day.*

### STATIONARY and PORTABLE OUTFITS



Stationary and portable outfits built with elevators and screens, with or without power, to meet individual demands. Special attention is given to portable crushing and screening outfits for Highway Builders, Contractors, quarries, pits, etc.

These combination outfits are exceptionally strong and durably constructed, yet they are light enough to move quickly over ordinary roads.

### REVOLVING SCREENS



We furnish screens for light, medium, or heavy service and in any length desired. We also furnish perforated steel plates and steel wire screen sections in any weight, mesh, diameter, or length to meet your requirements.

See our Exhibit at Booth AR 3 Road Show,  
St. Louis, Jan. 12-16.

### UNIVERSAL CRUSHER COMPANY

627 C Ave., West Cedar Rapids, Iowa  
25 years of unexcelled service

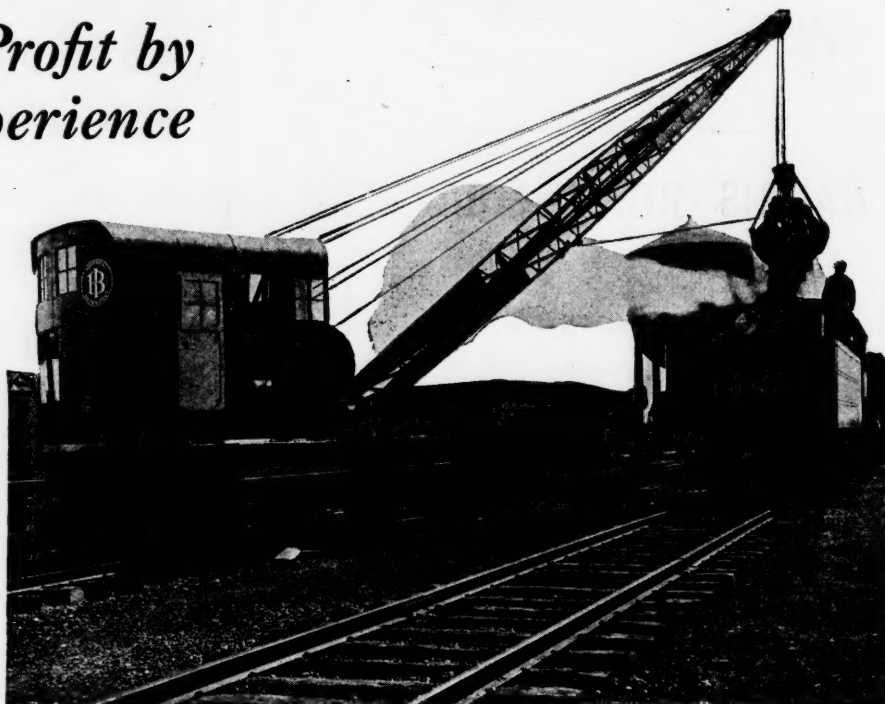


# JUDGE CRANE VALUES THE WAY BIG USERS DO

*You Can Profit by  
Their Experience*

Of all the locomotive cranes in service, those purchased by the railroads, iron and steel companies and the big utilities are the ones most often bought solely on performance records. Some of these companies use and keep costs on hundreds of cranes, their handling work is hard, and they employ large engineering staffs who know crane design and pass on every purchase. Consequently, their judgement is valuable to anyone interested in the economical handling of materials.

Go to any of these large plants throughout the country and ask their opinion about an Industrial Brownhoist. Let them tell you that no better cranes have ever been built, that they will handle materials at a lower cost per ton and that they will stand



Thirty-ton capacity Gasoline Powered Locomotive Crane coaling a locomotive. Because of their fast operating speeds and dependability, thousands of Industrial Brownhoists are used by the Nation's Railroads for all kinds of handling work.

up better and last longer. Consider, too, that this is not just idle talk because these same industries have bought far more Industrial Brownhoists than any other make of locomotive crane.

Industrial Brownhoists are sold by our own factory-trained men. Discuss your material handling methods with them and you will find that their experience makes possible many helpful suggestions. There is no obligation, of course.

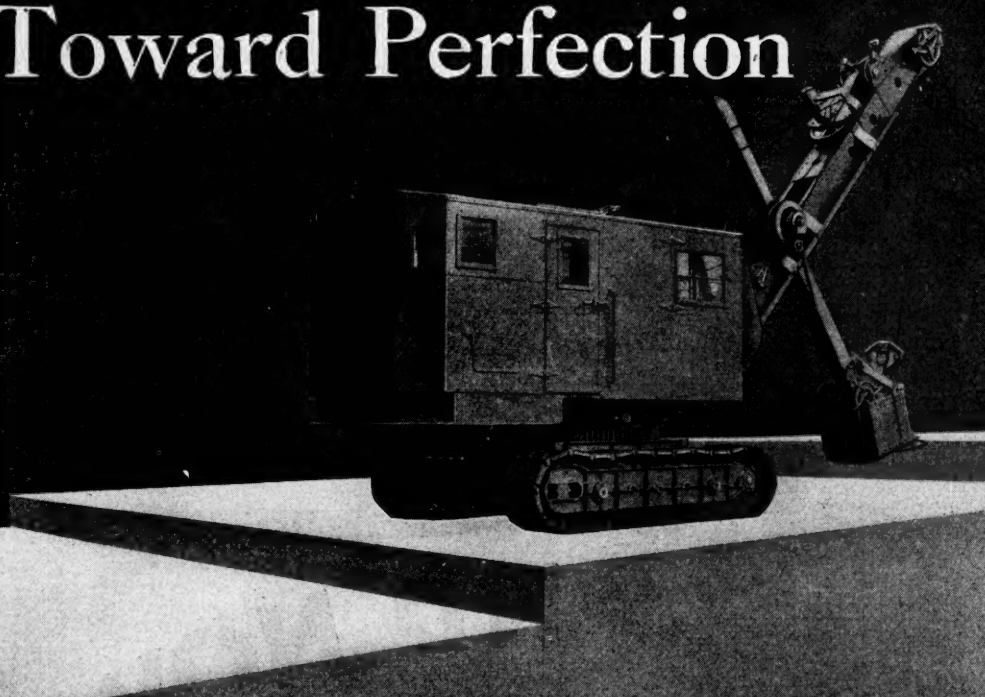
**Industrial Brownhoist Corporation, General Offices, Cleveland, Ohio**

District Offices: New York, Philadelphia, Pittsburgh, Detroit, Chicago, New Orleans, San Francisco, Cleveland.

Plants: Brownhoist Division, Cleveland; Industrial Division, Bay City, Michigan; Elyria Foundry Division, Elyria, Ohio.

# INDUSTRIAL BROWNHOIST

# Step by Step Toward Perfection



The first locomotive cranes manufactured in this country were built by Industrial Brownhoist a half century ago. That these early cranes were good ones is proved by the fact that many of them worked steadily for from twenty to thirty years.

Having a correct design from the very beginning, Industrial Brownhoist has always maintained a large engineering department whose duty it is to know the handling needs of industry and how to meet them. Step by step, a complete line of cranes and shovels has been developed, not in an experimental way, but based on actual knowledge gained from thousands of machines in service.

Today, over 16,000 Industrial Brownhoists have been built, far more than any other make. What more can you ask for in a crane or shovel than a machine backed by such a record?

Industrial Brownhoist Corporation, General Offices, Cleveland, Ohio

District Offices: New York, Philadelphia, Pittsburgh, Detroit, Chicago, New Orleans, San Francisco.

Plants: Brownhoist Division, Cleveland; Industrial Division, Bay City, Michigan; Elyria Foundry Division, Elyria, Ohio.

# INDUSTRIAL BROWNHOIST





# AND NOW!

## MODEL-S— full size one-yard SHOVEL

This new addition to the BAY CITY family widens the range of operation of these *fast workers* from  $\frac{3}{4}$  yard to 1 yard.

Model S full size 1 yard is the big brother of Model R. It is built like the original but is heavier and more rugged to take care of the larger 1-yard capacity.

It is full revolving and convertible to shovel, crane, trench-hoe, clamshell, dragline or backfiller.

For speed, power, stability and dependable service Model S has no superior in its class. Powerful motor unit, full length crawlers, unit-cast car body and revolving machinery base. Built throughout as BAY CITY is known to build thoroughly dependable shovels.

*Write for complete details.*

**BAY CITY SHOVELS, Inc.**

New York Office—302 Broadway

BAY CITY, MICH.

July 24, 1930 31

Market—ENGINEERING NEWS-RECORD—Place

**TRACTOR SHOVEL**  
convertible  
 $\frac{1}{4}$  yard

**MODEL K SHOVEL**  
convertible  
scant  $\frac{1}{2}$  yard

**MODEL K-2 SHOVEL**  
convertible  
full  $\frac{1}{2}$  yard

**4 ACES**  
in the shovel field

A complete range of shovel capacities from  $\frac{1}{4}$  to 1 yard machines—ready at all times to meet your earth moving problems.

And it is a problem to use a large capacity machine when a smaller shovel will do the same work, with less moving and hand-trimming. BAY-CITY shovels are built by experienced manufacturers—built to meet YOUR requirements.

There are refinements and features of design and construction in BAY-CITY machines that give you fast swing, fast haul and crowd and quick travel. ALL BAY-CITY shovels are convertible, easily controlled and economical. BAY-CITY shovels are at work everywhere and making good doing unusual jobs. Jobs done by heavier machines—right done by hand—all sorts of jobs where dependable, continuous service is demanded. They are money-makers.

Before buying your next shovel investigate the "BAY-CITY Family of Fast Workers"—Write now for catalogs and complete information.

**BAY CITY SHOVELS, Inc.**  
New York Office—302 Broadway BAY CITY, MICH.

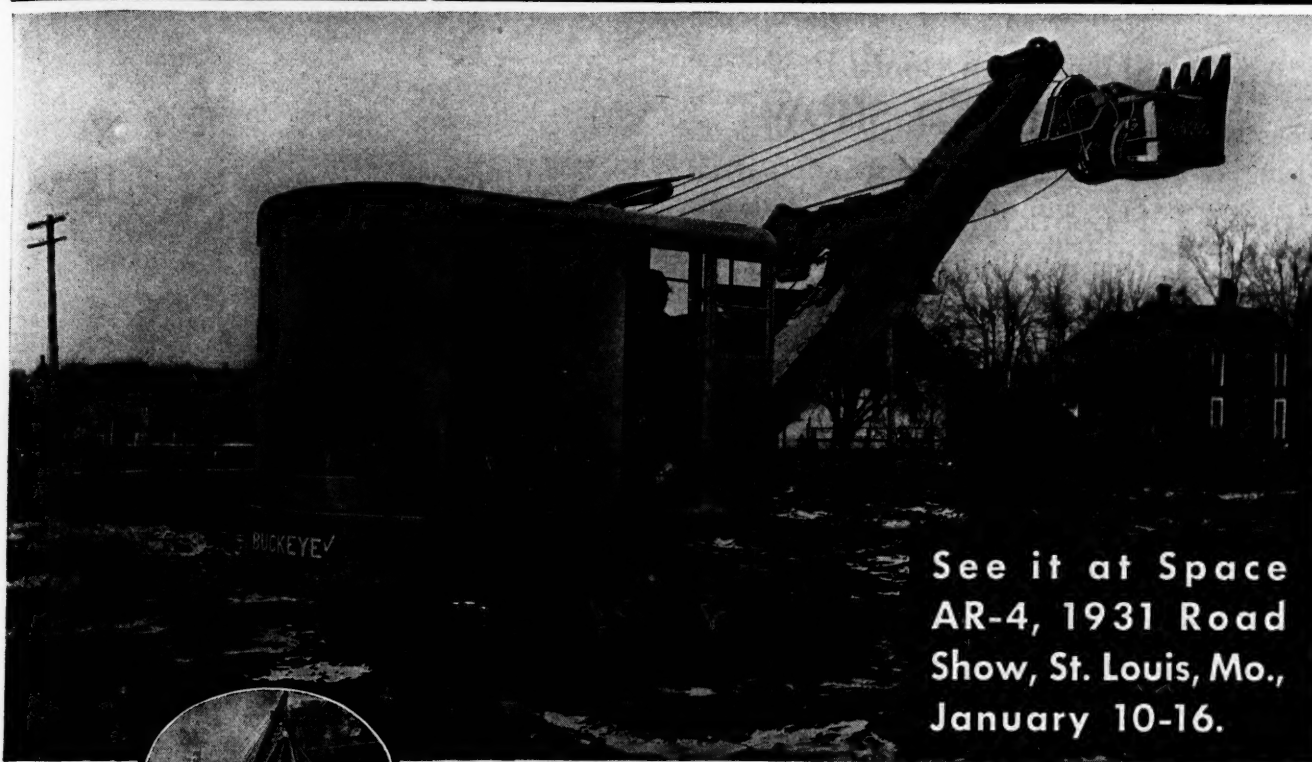
**BAY-CITY SHOVELS**

# BAY-CITY SHOVELS

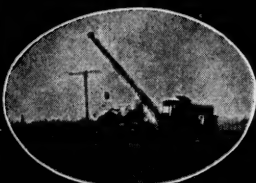
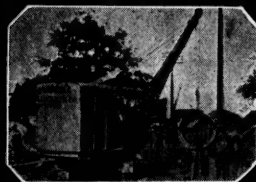
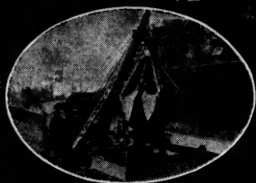
THE BAY-CITY FAMILY  
OF FAST WORKERS

# 3/8-YARD BUCKEYE SHOVEL PLUS

*Clamshell · Crane · Dragline · Backfiller*



See it at Space  
AR-4, 1931 Road  
Show, St. Louis, Mo.,  
January 10-16.



## OFFERS MULTIPLIED UTILITY

Built into the compact, sturdy new Buckeye 3/8-yard full-revolving shovel is a wide, profitable service range never previously available in any equipment of its class — at its price.

The public in general (road and street contractors especially) is cordially invited to inspect this handy little unit at the 1931 Show. Mechanically, you will find that it fully measures up to Buckeye's rigid standards for dependable power, speed and economy.

Distinguishing features include electric starter and lights; full-length, steel-tread Alligator crawlers with provision for safe operation on grades; rotating and traveling bases of one-piece electric cast steel; 50 h. p. heavy-duty, medium-speed gasoline motor; fast hoisting and swinging speeds; rugged boom and dipper stick; and one-piece manganese steel dipper with removable, reversible manganese teeth points. One-man operation throughout.

As Clamshell, Crane, Dragline and Backfiller, Buckeye Model O—within its 3/8-yard capacity—has always offered greater earning ability per dollar of investment. Now, as a Shovel also, it will more than pay its way every day on some construction job or other.

THE BUCKEYE TRACTION DITCHER CO.  
FINDLAY, OHIO

Over thirty years  
**Buckeye** ✓

THERE'S A BUCKEYE SALES AND SERVICE OFFICE NEAR YOU



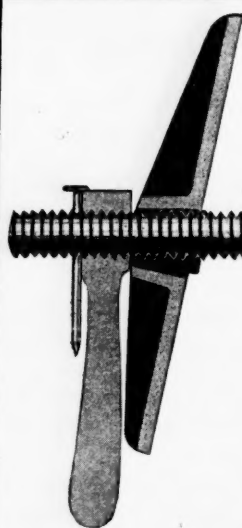
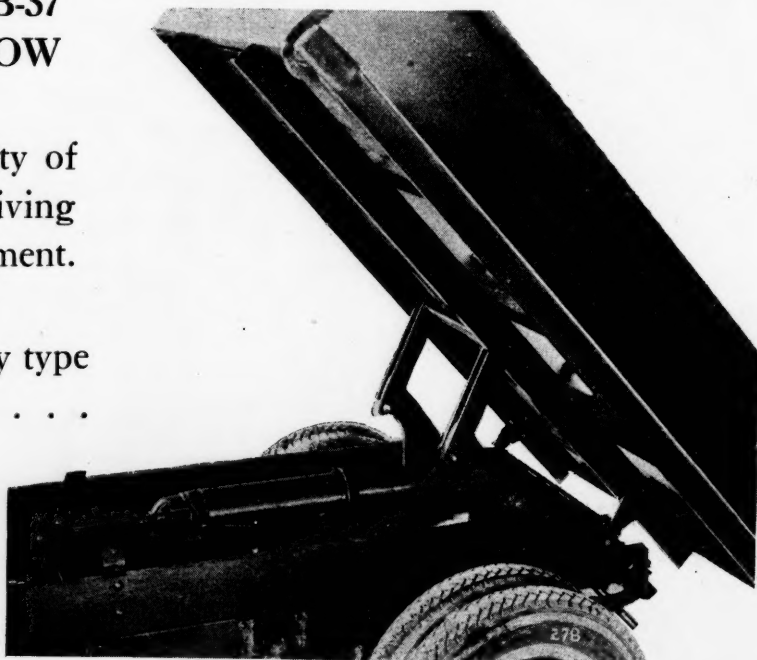
## See the NEW SUPERIOR HYDRAULIC HOIST

On Display in Booth B-37  
at the ROAD SHOW

THE price and quality of  
this new unit is receiving  
a lot of favorable comment.

We make a hoist and body type  
for every hauling need . . .

**SUPERIOR BODY  
CORPORATION**  
Marion, Indiana

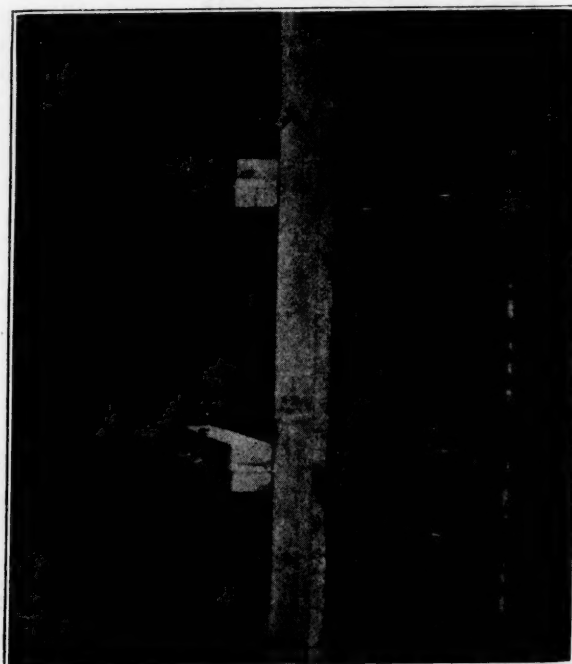
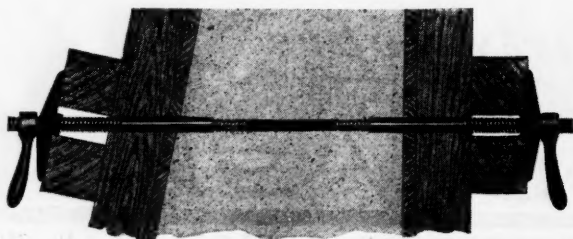


## WILLIAMS FORM CLAMPS

Most Economical  
*for*  
Filtration Plants,  
Disposal Plants,  
Bridges, Dams, etc.

*For further information write*

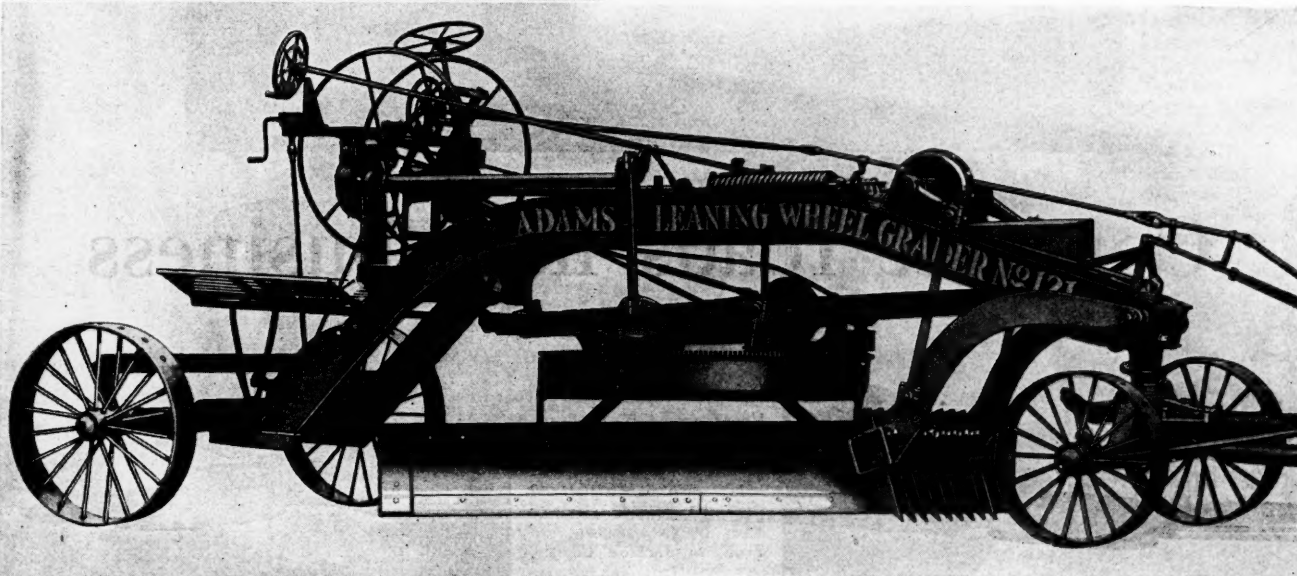
**Williams Concrete Equipment Co.**  
101 Campau Ave., Grand Rapids, Mich.



# ANNOUNCING A NEW TYPE ADAMS GRADER

**S**TEEP bank cutting . . . Wider reach of blade beyond the wheels . . . Greater pitch control of moldboard for plowing . . . An amazing range of blade adjustments marks a new type leaning wheel grader in the famous Adams line for 1931.

With this new type, heavy duty, combination scarifier-grader, you can cut a 60-degree slope when the wheels are on level ground—a steeper slope under many working conditions. You can reach a 12-foot blade  $5\frac{3}{4}$  feet outside the line of wheels for shoulder finishing— $8\frac{3}{4}$  feet with extension. You can dip the blade, by front semi-circle control, to acute angles for plowing.



"COST LESS IN THE LONG RUN ALWAYS"

## ADAMS

LEANING WHEEL GRADERS



A great machine for doing more work—faster—and at lowest cost over longest period of years! Following construction features help explain why:

Adams all-welded frame—cross-connected by five tubular steel members, which prevent twisting and weaving. Blade held unyieldingly against cut.

Heavy ball and socket joint at front axle permits oscillation over uneven ground.

All blade control connections machine-finished ball and socket type adjustable for wear.

All gears machine cut, enclosed; worms fitted with Timken bearings for end thrust.

All adjustments, including rear axle side-shift, made from platform. Timken bearings in wheels.

*Two sizes: No. 121, with 12-foot or 14-foot blade; No. 22 with 8, 9, or 10-foot blade. Sold with or without scarifier.*

*Write for further information.*

### J. D. ADAMS COMPANY

INDIANAPOLIS, IND.

ATLANTA

MEMPHIS

DALLAS





## Concrete roads help business



Upper view, West Beach Drive at Biloxi, Miss.; to left, Mount Dora Road, Lake County, Florida; to right, an inviting straightaway on the Spanish Old Trail, in Jackson County, Mississippi.

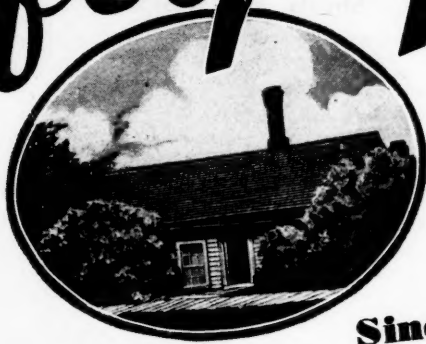


Trade follows good roads. Many a profitable customer is going "the other way" from his nearest community because the roads are better. Smooth, safe roads of portland cement concrete—plus good merchandising—keep trade where it belongs and attract tourists from off the "beaten paths."

**PORTLAND CEMENT Association**  
*Concrete for Permanence*

33 WEST GRAND AVENUE  
 C H I C A G O

# Fifty Years



Since 1881 . . .  
when Garfield was the country's twentieth president, this institution has manufactured and distributed equipment for many types of industry. Today, this line is composed of over 750 items. In your plans for efficiency, modernization and reduction of costs consider Lansing Company Products.

Wheelbarrows  
Reynolds Trucks  
Live and Dead  
Skids  
Concrete and  
Mortar Mixers  
Concrete Carts  
All-steel Trucks  
and Trailers  
Two and Four  
Wheel Trucks  
Wheel and Drag  
Scrapers  
Fifth Wheels  
Trailers  
Baggage Trucks  
Dump Trailers  
Hand Carts  
Casters and  
Wheels  
Coal and Concrete  
Chutes  
Etc., etc.

#### BRANCHES:

New York Boston  
Philadelphia  
Chicago Kansas City  
Minneapolis  
San Francisco



# LANSLING

C O M P A N Y

HALF a CENTURY of PROGRESS



1881 - 1931



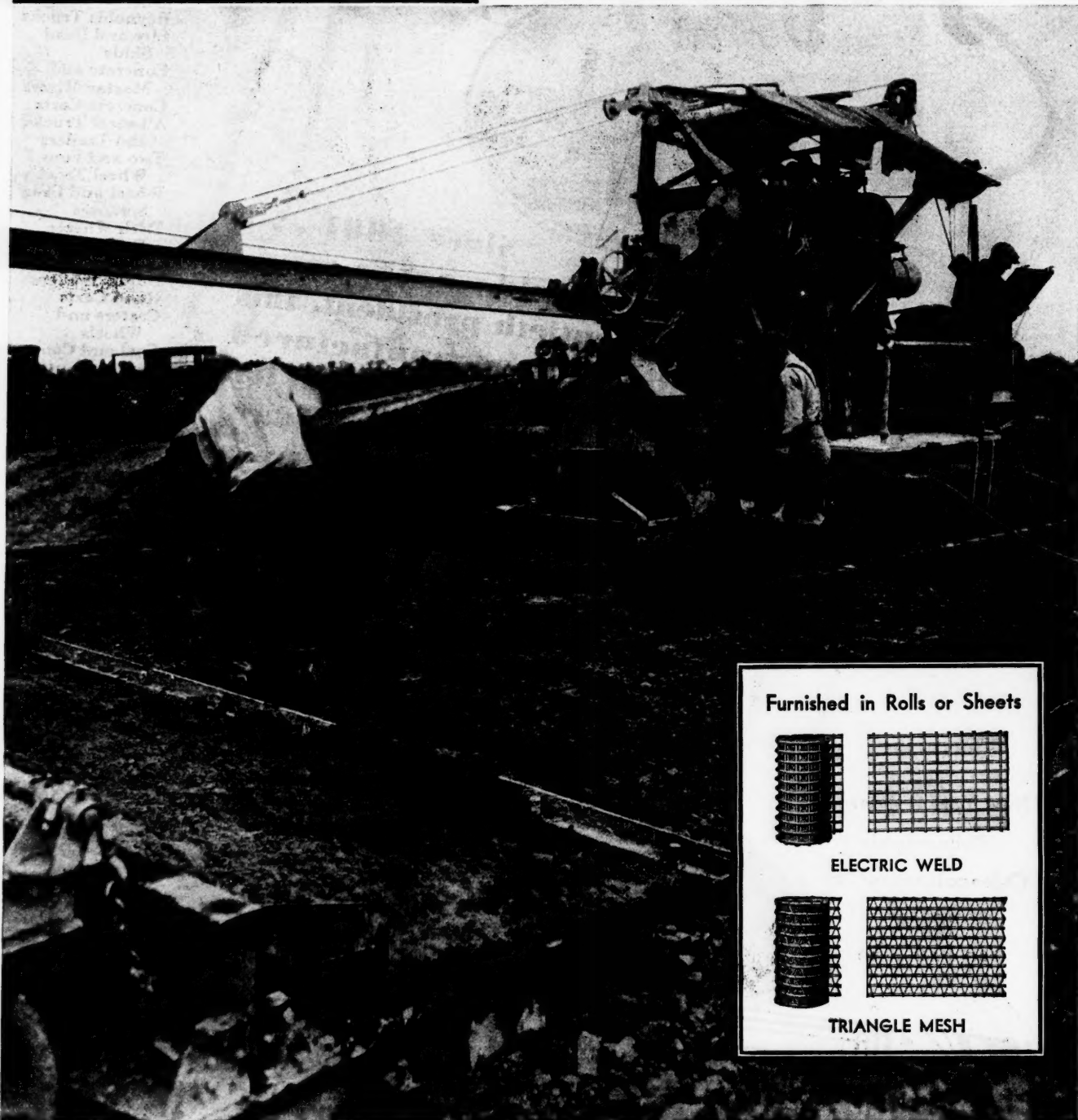
AMERICAN STEEL &amp; WIRE COMPANY

# WIRE FABRIC

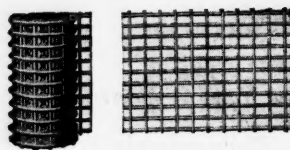
## Building Good Roads and Streets Better

Highway departments have solved the problem of "better" good roads and streets by standardizing on wire fabric reinforcement. The life of the pavement is increased and the problem of costly and disfiguring tar kettle maintenance is eliminated.

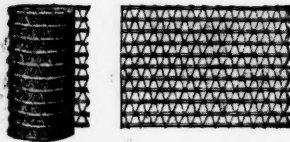
For reasons why—write for a copy of "Reinforced Roads & Streets" and "Reasons".



Furnished in Rolls or Sheets



ELECTRIC WELD



TRIANGLE MESH

1831



1931

### AMERICAN STEEL & WIRE COMPANY

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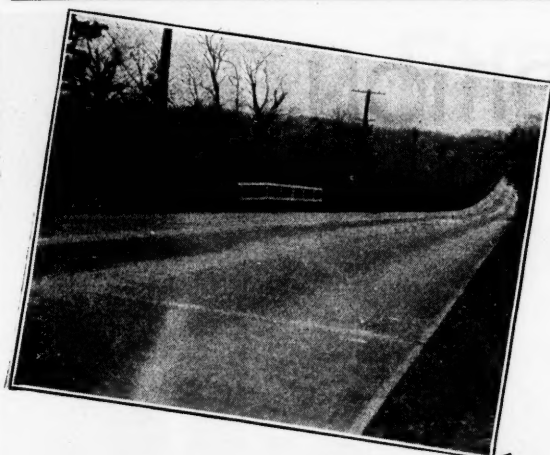


STATES STEEL CORPORATION

And All Principal Cities

Pacific Coast Distributors: Columbia Steel Company, Russ Building, San Francisco

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**Carey Elastite**  
EXPANSION JOINT

protects these Roads  
against Expansion  
and Contraction »

THE investment in a modern highway must be safeguarded in every way. That is why Carey Elastite Expansion Joint has been installed in concrete highways in every state. It protects the road against expansion and contraction stresses before they occur.

Carey Elastite Expansion Joint is a proven material. Road builders have depended upon it for almost 20 years. Made with sturdy felt side walls, it ships perfectly, retains its shape in all weather, and is installed quickly. Stocks are maintained in all shipping centers; and any order can be delivered on the job without delay.

Full data and current prices on request.

CAREY PRODUCTS:

CAREYSTONE CORRUGATED SIDING  
BUILT-UP ROOFS  
HEAT INSULATIONS  
ROOF PAINTS  
WATERPROOFINGS  
ELASTITE BRIDGE FLOORING  
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PREPARED ROOFINGS

THE PHILIP CAREY COMPANY «» Lockland, Cincinnati, Ohio



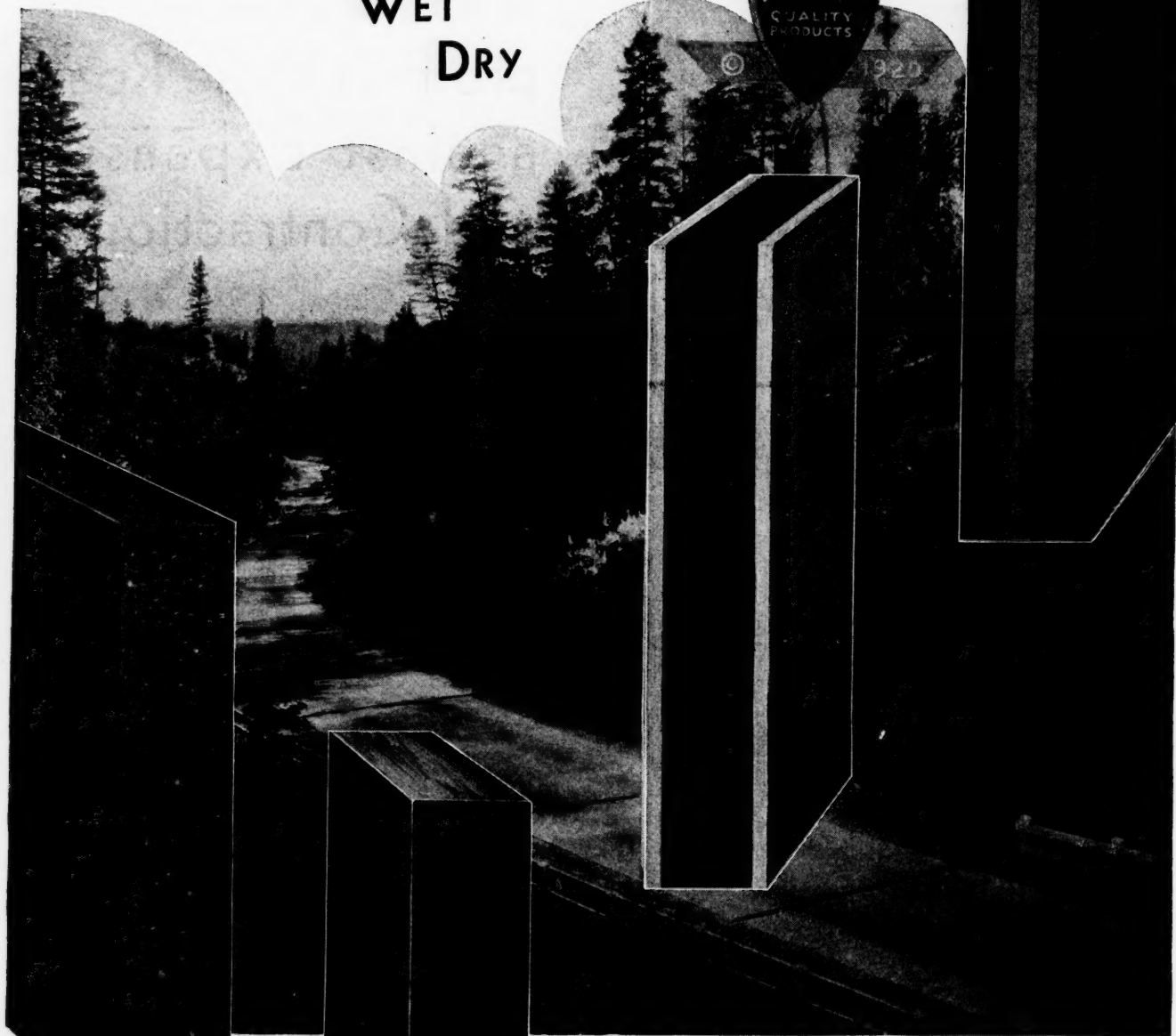
# FOR EVERY CONDITION

HOT

COLD

WET

DRY



The Serviced Sponge Rubber Expansion Joint is the most perfect protection from severe water conditions and extreme heat. A non-oozing super-elastic joint material—impervious to water.

Type "B" Serviced Expansion Joints are of special quality asphalt and selected fibres—very low in moisture absorption—maximum elasticity and plasticity—minimum of oozing—long life and resistant to traffic wear.

Reinforced Serviced Expansion Joints were developed for requirements demanding rigidity and strength in fillers. The core of fiber is heavily saturated with high quality asphalt and reinforced on the sides by sheets of saturated felt—a quality joint for certain conditions.

Serviced Center-Core Expansion Joints of fibrated asphalt take up expansion and contraction and assure waterproofing by close adhesion to the pavement proper. The fiber center core reinforces and furnishes elasticity while the fibrated asphalt sides guarantee adhesion to the pavement slab.

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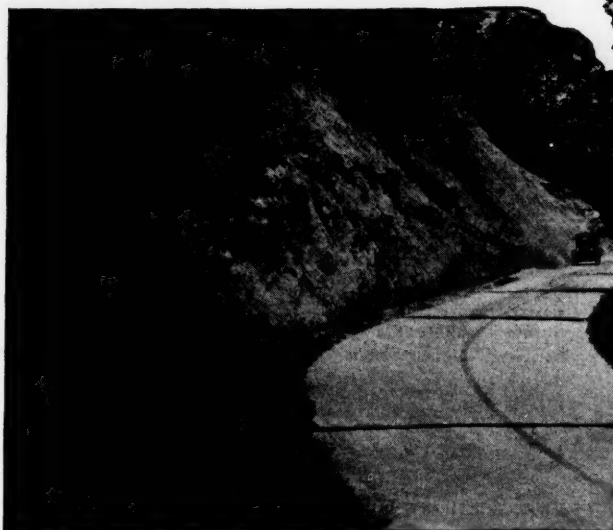
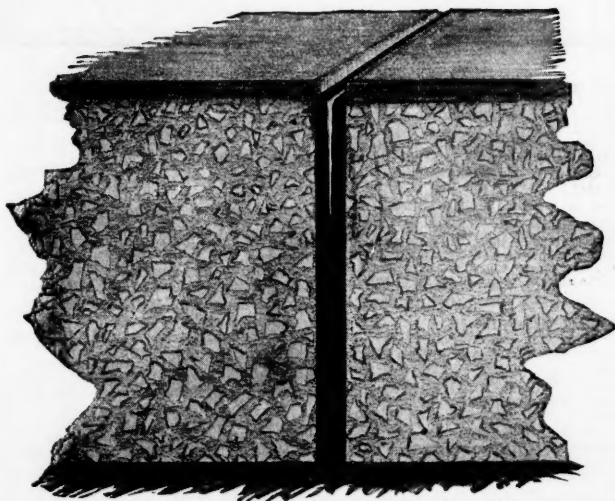
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# BETTER EXPANSION JOINTS

## BASE FILL OF THE PERFECT POURED JOINT

The cross-section view at the left shows a joint or crevice base fill with—cold poured—SERVICISED LIQUID RUBBER ASPHALT—a tough elastic filling—non-oozing in nature, which sets to a leathery mass.



## THE PERFECT POURED JOINT

The cross-section view to the right shows the Perfect Poured joint or crevice fill—note the top finish filler—

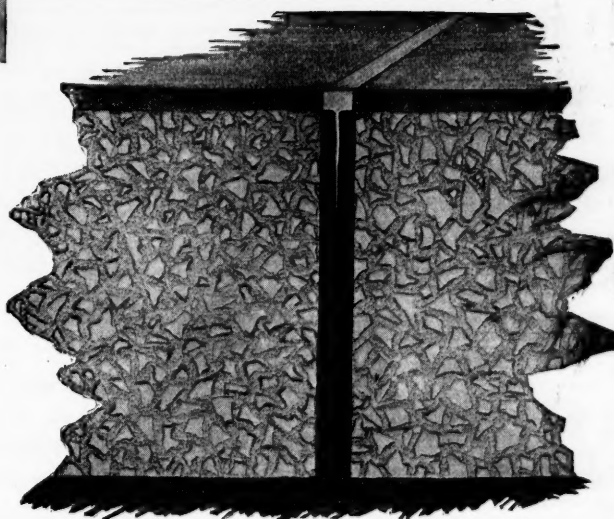
### SERVICISED GRAY FILLER

poured cold or hot from emulsified or solid form as desired—removes the unsightly black lines from paving and makes a better expansion joint. Write for full particulars.

## OTHER SERVICISED PRODUCTS

Asphalt Planks  
Rail Filler  
Asphalt Tile  
Rubber Block

Expansion Joints  
Asphalt Emulsions  
Colored Emulsions  
Cable Trunking



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# Classified Reference Index for Buyers

## ABRASIVE MATERIALS.

Carborundum Co., Niagara Falls, N. Y.

## ACCOUNTANTS (Cert. and Cost.)

Audit Company of the South, Atlanta, Ga.  
Black & Co., Baltimore, Md.  
Ernst & Ernst, New York, N. Y.  
Hollowell, Gorham & Co., Greensboro, N.C.  
Le Baron, E. T., Jacksonville, Fla.

## AERIAL MAPS and SURVEYS.

Airmap Corp. of Amer., Brooklyn, N. Y.  
Lacey & Co., Jas. D., New York, N. Y.

## AIR COMPRESSORS (Stationary and Portable.)

De Laval Steam Turbine Co., Trenton, N.J.  
Equipment Corp. of America, Chicago, Ill.  
Gardner-Denver Co., Quincy, Ill.  
General Electric Co., Schenectady, N. Y.  
Ingersoll-Rand Co., New York, N. Y.  
Novo Engine Co., Lansing, Mich.  
Quincy Compressor Co., Quincy, Ill.  
Sullivan Machinery Co., Chicago, Ill.  
Westinghouse Traction Brake Co., Wilmerding, Pa.

## AIR HEATERS.

Babcock & Wilcox Co., New York.

## AIRPORT EQUIPMENT

International Derrick & Equipment Co., Columbus, Ohio.

## AIRPORTS.

Shaw Co., Russell B., St. Louis, Mo.

## ALUMINUM BRONZE POWDER.

Aluminum Co. of America, Pittsburgh.

## AMMONIA Valves and Fittings.

Vogt Mch. Co., Henry, Louisville, Ky.

## ANGLE IRON-WORKING MACHINERY.

Whitney Metal Tool Co., Rockford, Ill.

## APPRAISERS.

Ballingier Co., Philadelphia, Pa.  
Conard, William R., Burlington, N. J.  
Main, Inc., Chas. T., Boston, Mass.

## ARCHITECTS.

Ballingier Co., Philadelphia, Pa.  
Boney, Leslie N., Wilmington, N. C.  
Chase, Wm. J., J. Atlanta.  
Main, Inc., Chas. T., Boston, Mass.  
Milburn, Heister & Co., Wash., D. C.  
Moyer Co., Tilghman, Allentown, Pa.  
Prescher & Co., Inc., G. Lloyd, Atlanta.  
Serrine & Co., J. E., Greenville, S. C.  
Wheeler, Walker H., Minneapolis, Minn.  
Widmer Engineering Co., St. Louis, Mo.  
—(Golf Course, Landscape.)  
Draper, E. S., Charlotte, N. C.  
Spoon & Lewis, Greensboro, N. C.

## ARCHITECTS' SUPPLIES.

Weber Co., Inc., F., Philadelphia, Pa.

## ARCHITECTURAL IRON WORK.

Dietrich Brothers, Baltimore, Md.  
Virginia Bridge & Iron Co., Roanoke, Va.

## ASPHALT.

Gulf Refining Co., Pittsburgh, Pa.

## —(Emulsified.)

Headley Emulsified Products Co., Philadelphia, Pa.

## —Filler.

American Limestone Co., Knoxville, Tenn.  
Servicised Products Corp., Chicago, Ill.

## —(Plants.)

Simplicity System Co., Chattanooga, Tenn.

## AUDITORS.

Ernst & Ernst, New York, N. Y.  
Hollowell, Gorham & Co., Greensboro, N.C.  
Le Baron, E. T., Jacksonville, Fla.

## BABBITT METAL.

Ryerson & Sons, Inc., Jos. T., St. Louis and New York.

## BACKFILLERS.

Buckeye Traction Ditcher Co., Findlay, Ohio.  
Harscofeger Corp., Milwaukee, Wis.  
National Equipment Corp. (Inlay, Parsons), Milwaukee, Wis.

## BALLAST (Railroad.)

American Limestone Co., Knoxville, Tenn.

## BANKERS and BROKERS.

Provident Saving Bank & Trust Co., Cincinnati, Ohio.

## BANKS and TRUST COMPANIES.

Baltimore Commercial Bank, Balto., Md.  
Baltimore Trust Co., Baltimore, Md.  
Bank of Alabama, The, Ensley, Ala.  
Bank of New York & Trust Co., N. Y.  
First and Merchants National Bank, Richmond, Va.  
Mercantile Trust Co., Baltimore, Md.

## BARGES (Steel.)

American Bridge Co., New York, N. Y.  
McClintic-Marshall Co., Pittsburgh, Pa.

## BARS (Steel, Rounds, Flats, Hexagon and Squares.)

Carnegie Steel Co., Pittsburgh, Pa.  
Carnegie Steel Co., Birmingham, Ala.  
Gulf States Steel Co., Birmingham, Ala.  
Knockville Iron Co., Knoxville, Tenn.  
Republic Steel Corp., Youngstown, Ohio.  
Ryerson & Son, Inc., Jos. T., St. Louis and New York.  
Sweet's Steel Corp., Williamsport, Pa.  
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.  
Timken Roller Bearing Co., Canton, O.  
Virginia Bridge & Iron Co., Roanoke, Va.  
Youngstown Sheet & Tube Co., Youngstown, Ohio.

## BATTERIES (Storage.)

Electric Storage Battery Co., Phila., Pa.

## BEAMS, CHANNELS, ANGLES.

Belmont Iron Works, Philadelphia, Pa.  
Carnegie Steel Co., Pittsburgh, Pa.  
Chattanooga Boiler & Tank Co., Chattanooga, Tenn.  
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.  
Virginia Bridge & Iron Co., Roanoke, Va.

## BEARINGS (Anti-friction.)

Hyatt Roller Bearing Co., Newark, N. J.  
Timken Roller Bearing Co., Canton, Ohio.

## —(Line Shaft.)

Wood's Sons Co., T. B., Chambersburg, Pa.

## —(Roller.)

Hyatt Roller Bearing Co., Newark, N. J.  
Timken Roller Bearing Co., Canton, Ohio.

## BELT (Chain.)

Diamond Chain & Mfg. Co., Indianapolis.

## —(Leather, Canvas, Rubber.)

Charlotte Leather Belting Co., Charlotte, N. C.

Republic Rubber Co., Youngstown, Ohio.

## —Dressing.

Dixon Crucible Co., Jos., Jersey City, N.J.

## BELT CONVEYORS.

Barber-Greene Co., Aurora, Ill.

## BILLETS (Basic Open Hearth.)

Gulf States Steel Co., Birmingham, Ala.  
Republic Steel Corp., Youngstown, Ohio.  
Tennessee Coal, Iron & Railroad Co., Birmingham, Ala.

## BINS (Steel Loading.)

Blaw-Knox Co., Pittsburgh, Pa.  
Butler Bin Co., Waukesha, Wis.  
Erie Steel Construction Co., Erie, Pa.

## BLASTING POWDER and Accessories.

Du Pont de Nemours & Co., E. I., Wilmington, Del.  
Hercules Powder Co., Inc., Wilmington, Del.

## BLINDS (Venetian and Awning.)

Wilson Corp., The J. G., New York.

## BLOCKS (Chain)

Wright Mfg. Co., Lisbon, Ohio.

## —(Friction.)

Palmer Asbestos & Rubber Corp., Chicago.

## —(Tackle, for Wire and Manila Rope.)

Patterson Co., W. W., Pittsburgh.

## BOILERS (New.)

Babcock & Wilcox Co., The, New York.  
Charleston Dry Dock & Machine Co., Charleston, S. C.  
Chattanooga Boiler & Tank Co., Chattanooga, Tenn.  
Cole Mfg. Co., R. D., Newnan, Ga.  
Combustion Engr. Corp., New York, N. Y.

Hodges Walsh Weldner Co., Chattanooga, Tenn.

Lombard Iron Works & Supply Co., Augusta, Ga.

Schodel's Sons Co., J. S., Macon, Ga.

Titusville Iron Works Co., Titusville, Pa.

Vogt Mch. Co., Henry, Louisville, Ky.

## —(Oil.)

Babcock & Wilcox Co., New York.

## —(Used.)

Delta Equipment Co., Philadelphia, Pa.

O'Brien Machinery Co., Philadelphia, Pa.

Randle Machinery Co., The, Cincinnati, O.

Zelnicker Supply Co., W. A., St. Louis.

## BOILER SETTINGS.

Babcock & Wilcox Co., New York.

Harbison-Walker Refractories Co., Pittsburg.

## —Tubes.

Babcock & Wilcox Co., New York.

National Tube Co., Pittsburgh, Pa.

Ryerson & Son, Inc., Jos. T., St. Louis and New York.

## —Tubes (Charcoal, Iron.)

Reading Iron Co., Reading, Pa.

## BOLTS, Rivets, Studs, Washers.

Bethlehem Steel Co., Bethlehem, Pa.

Progressive Mfg. Co., Torrington, Conn.

Republic Steel Corp., Youngstown, Ohio.

Russell, Burdall & Ward Bolt & Nut Co., Port Chester, N. Y.

Ryerson & Son, Inc., Jos. T., St. Louis and New York.

Virginia Bridge & Iron Co., Roanoke, Va.

## —(Track.)

Sweet's Steel Co., Williamsport, Pa.

## BOND BUYERS.

Ganaway & Co., S. G., Chicago.

Hanckett Bond Co., Inc., The, Chicago.

Law & Co., A. M., Spartanburg, S. C.

Mercantile Trust Co., Baltimore, Md.

Nuveen & Co., John, Chicago, Ill.

Provident Savings Bank and Trust Co., Cincinnati, Ohio.

## BORINGS (Core.)

Kennedy-Riegler Drilling Co., New York City.

Mott Core Drilling Co., Huntington, W. Va.

Pennsylvania Drilling Co., Pittsburgh, Pa.

Southland Drilling Co., Saltville, Va.

Sprague & Howard, Inc., Scranton, Pa.

## BOXES (Paper.)

Old Dominion Box Co., Lynchburg, Va.

## BRAKE LINING

Palmer Asbestos & Rubber Corp., Chicago.

## BRASS GOODS.

Copper and Brass Research Assn., New York.

Mueller Co., Decatur, Ill.

## BRICK (Common Building.)

Friend & Co., Inc., Petersburg, Va.

## —(Fire.)

Dee Co., Wm. E., Oak Hill, Ohio.

North Amer. Refractories Co., Cleveland, O.

Taylor Sons Co., Charles, Cincinnati.

## —(Vitrified, Paving.)

National Paving Brick Mfrs. Assn., Washington, D. C.

## —and Clayworking Machy.

Steel & Sons, J. C., Statesville, N. C.

## BRIDGE (Asphalt Planking)

Servicised Products Corp., Chicago, Ill.

## —(Operating Machinery.)

Earle Gear & Machine Co., Phila., Pa.

## —Timber.

American Croospring Co., Louisville, Ky.

Kirby Lumber Co., Houston, Texas.

## BRIDGES (Concrete.)

Atlantic Bridge Co., Greensboro, N. C.

## —(Crested Wood.)

Atlantic Bridge Co., Greensboro, N. C.

## —(Steel.)

American Bridge Co., New York, N. Y.

Atlantic Bridge Co., Greensboro, N. C.

Belmont Iron Works, Philadelphia, Pa.

Bristol Steel & Iron Works, Inc., Bristol, Va.

Champion Bridge Co., Wilmington, O.

Converse Bridge & Steel Co., Chattanooga, Tenn.

Ingalls Iron Works Co., Birmingham, Ala.

International Derrick & Equipment Co., Columbus, Ohio.

McClintic-Marshall Co., Pittsburgh, Pa.

Nashville Bridge Co., Nashville, Tenn.

Virginia Bridge & Iron Co., Roanoke, Va.

## BRONZE (Architectural.)

Heath Company, J. S., Waukegan, Ill.

Michaels Art Bronze Co., Covington, Ky.

## BUBBLERS.

Rundle-Spence Mfg. Co., Milwaukee, Wis.

## BUCKETS (Clam Shell.)

Blaw-Knox Co., Pittsburgh, Pa.

Erie Steel Construction Co., Erie, Pa.

Hayward Co., The, New York, N. Y.

Industrial Brownholt Corp., Cleveland, O.

Owen Bucket Co., The, Cleveland, Ohio.

—(Dredging, Excavating, Sewer, etc.)

Erie Steel Construction Co., Erie, Pa.

Hayward Co., The, New York, N. Y.

Monaghan Mfg. Corp., Chicago, Ill.

Owen Bucket Co., The, Cleveland, Ohio.

Stuebner Iron Works, G. L., Long Island City, N. Y.

## —(Elevator.)

Hendrick Mfg. Co., Carbondale, Pa.

Webster & Weller Mfg. Cos., Chicago.

## —(Orange Peel.)

Hayward Co., The, New York, N. Y.

## —(Ore Handling.)

Hayward Co., The, New York, N. Y.

Owen Bucket Co., The, Cleveland, Ohio.

Stuebner Iron Works, G. L., Long Island City, N. Y.

## BUILDERS and Contractors.

Copper Co., Inc., The John W., Richmond, Va.

Moyer Co., Tilghman, Allentown, Pa.

Thompson & Bros., T. C., Charlotte, N. C.

White Engineering Corp., J. G., New York.

## BUILDINGS (Industrial.)

Belmont Iron Works, Philadelphia, Pa.

Blaw-Knox Co., Pittsburgh, Pa.

Butler Mfg. Co., Kansas City, Mo.

Edwards Mfg. Co., Cincinnati, O.

International Derrick & Equipment Co., Columbus, O.

McClintic-Marshall Co., Pittsburgh, Pa.

Nashville Bridge Co., Nashville, Tenn.

Truscon Steel Co., Youngstown, O.

Virginia Bridge & Iron Co., Roanoke, Va.

## —(Portable Sheet Metal.)

Butler Mfg. Co., Kansas City, Mo.

International Derrick & Equipment Co., Columbus, O.

## BULKHEADS.

Shore-Line Builders, Inc., Jacksonville, Fla.

Snare Corp., Frederick, New York, N. Y.

## BULLDOZERS.

Trackson Co., Milwaukee, Wis.

## BUSINESS METHODS.

Ernst & Ernst, New York, N. Y.

## CABLE (Elevator.)

Roebling's Sons Co., John A., Trenton, N. J.

## —(Stud Link.)

Woodhouse Chain Works, Trenton, N. J.

## —and Wire (Electric.)

American Steel & Wire Co., Balto., Md.

Okonite Co., New York, N. Y.

Roebling's Sons Co., John A., Trenton, N.J.

Western Electric Co., New York City.

## CABLEWAYS (Overhead Suspension.)

Broderick & Bascom Rope Co., St. Louis.

Lidgerwood Mfg. Co., Elizabeth, N. J.


Sauerman Bros., Chicago, Ill.

## CALCIUM CHLORIDE.

Grasselli Chemical Co., Inc., Birmingham.

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N. Y.

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Mountain State Steel Foundries, Parkers-  
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—(Brass, Bronze and  
Aluminum.)  
Richmond Foundry & Mfg. Co., Rich-  
mond, Va.

—(Chilled Iron.)  
Fuller Lehigh Co., Fullerton, Penna.

—(Gray Iron.)  
Fuller Lehigh Co., Fullerton, Penna.  
Glansberg Pipe & Fdry. Co., Lynchburg, Va.  
Jefferson Foundry Co., Birmingham, Ala.  
Richmond Foundry & Mfg. Co., Rich-  
mond, Va.  
Roanoke Iron & Bridge Works, Inc.,  
Roanoke, Va.  
Salem Fdry. & Mch. Wks., Salem, Va.  
U.S. Pipe & Foundry Co., Burlington, N.J.

—(Malleable Iron and Steel.)  
Timken Roller Bearing Co., Canton, O.

—(Semi-Steel.)  
Jefferson Foundry Co., Birmingham, Ala.  
Salem Fdry. & Mch. Wks., Salem, Va.

—(Steel.)  
Bethlehem Steel Co., Bethlehem, Pa.  
Crucible Steel Casting Co., Lansdowne,  
Delaware Co., Pa.  
Deemer Steel Casting Co., New Castle, Del.  
Lunkenheimer Co., Cincinnati, Ohio.  
Mountain State Steel Foundries, Parkers-  
burg, W. Va.

CEILING (Metal.)  
Micer Steel Co., Milwaukee, Wis.

CEMENT (High Temperature.)  
Harbison-Walker Refractories Co., Pittsburg,  
North American Refractories Co., Cleve-  
land, Ohio.

—(Portland.)  
Alpha Portland Cement Corp., Birming-  
ham, Ala.  
Lehigh Portland Cement Co., New York.  
Louisville Cement Co., Louisville, Ky.  
Portland Cement Assn., Chicago, Ill.

—Guns.  
Cement-Gun Co., Inc., Allentown, Pa.

—Machinery.  
Traylor Engr. & Mfg. Co., Allentown, Pa.

CHAIN BLOCKS (See Blocks,  
Chain.)

CHAINS (Dredge, Quarry, Steam  
Shovel.)  
Knorrville Iron Co., Knoxville, Tenn.  
Woodhouse Chain Works, Trenton, N. J.

—(High Speed Roller.)  
Diamond Chain & Mfg. Co., Indianapolis.

—(Silent Drive.)  
Diamond Chain & Mfg. Co., Indianapolis.

—(Sprocket.)  
Chain Belt Co., Milwaukee, Wis.

—(Welded.)  
Woodhouse Chain Works, Trenton, N. J.

CHAIRS (Opera and Theatre.)  
Andrews Co., A. H., Chicago, Ill.

CHEMICALS.  
Davison Chemical Co., Baltimore, Md.  
Grasselli Chemical Co., Inc., Birmingham.

CHEMISTS, CHEMICAL ENGI-  
NEERS (Analytical.)  
Barrow-Ages Laboratories, Memphis, Tenn.  
Flood & Co., Walter H., Chicago, Ill.  
Froehling & Robertson, Inc., Richmond, Va.  
Hunt Co., Robert W., Chicago, Ill.  
Melig, Bassett & Slaughter, Phila., Pa.  
Pittsburgh Testing Laboratories, Pitts-  
burgh, Pa.  
Southwestern Laboratories, Fort Worth, Tex.  
Stillman & Van Sclien, New York.  
Wiley & Co., Inc., Baltimore, Md.

—(Consulting, Paper Industry.)  
Froehling & Robertson, Inc., Richmond, Va.

CHIMNEYS (Concrete.)  
Rust Engineering Co., Birmingham, Ala.

—(Radial Brick.)  
Rust Engineering Co., Birmingham, Ala.

CHLORIDE ACCUMULATOR.  
Electric Storage Battery Co., Phila., Pa.

CIRCUIT BREAKERS.  
I. T. E. Circuit Breaker Co., Phila., Pa.  
Westinghouse Electric & Mfg. Co., E.  
Pittsburgh, Pa.

CITY AND TOWN PLANNING.  
Draper, E. S., Charlotte, N. C.

CLOCKS (For all purposes.)  
Kaiser Clock Co., L. E., Baltimore, Md.

—(Watchman's Portable.)  
Davis-Paradis Watchman's Clock Corp.,  
New York, N. Y.  
Kaiser Clock Co., L. E., Baltimore, Md.

CLOTH (Wire.)  
Newark Wire Cloth Co., Newark, N. J.

CLUTCHES (Friction.)  
Caldwell Co., Inc., W. E., Louisville, Ky.  
Wood's Sons Co., T. B., Chambersburg, Pa.

COAL (Bituminous.)  
Sloss-Sheffield Steel & Iron Co., Birming-  
ham, Ala.  
Tennessee Coal, Iron & Railroad Co., Bir-  
mingham, Ala.

—and Ash-Handling Mch.  
Chain Belt Co., Milwaukee, Wis.  
Hayward Co., The, New York, N. Y.  
Industrial Brownhoist Corp., Cleveland, O.  
Northwest Engineering Co., Chicago.  
Webster & Weller Mfg. Cos., Chicago.

—Tipples.  
American Bridge Co., New York, N. Y.  
Virginia Bridge & Iron Co., Roanoke, Va.

COATINGS (Protective.)  
Headley Emulsified Products Co., Phila-  
delphia, Pa.

COCKS (Service.)  
Merco Nordstrom Valve Co., San Francisco,  
Calif.

COKE.  
Sloss-Sheffield Steel & Iron Co., Birming-  
ham, Ala.  
Tennessee Coal, Iron & Railroad Co.,  
Birmingham, Ala.

COLUMNS (Cast Iron.)  
U. S. Pipe & Fdry. Co., Burlington, N. J.

COMPRESSORS (Gasoline Ex-  
traction.)  
Sullivan Machinery Co., Chicago, Ill.

CONCRETE (Block Machinery.)  
Blystone Mfg. Co., Cambridge Springs, Pa.

—Construction (Reinforced.)  
Cement-Gun Co., Inc., Allentown, Pa.  
Cement Gun Construction Co., Chicago.  
Rust Engineering Co., Birmingham, Ala.

—Floor Slabs.  
Federal-American Cement Tile Co., Chicago.

—Information Only.  
Portland Cement Assn., Chicago, Ill.

—Mixers.  
Blystone Mfg. Co., Cambridge Springs, Pa.  
Chain Belt Co., Milwaukee, Wis.  
Dunning & Bochart Press Co., Inc.,  
Syracuse, N. Y.  
Equipment Corp. of America, Chicago, Ill.  
Jaeger Machine Co., Columbus, Ohio.

—Pipe Machinery (See Pipe  
Machinery, Concrete.)

—Placing Equipment.  
National Equipment Corp. (Insley Divi-  
sion), Milwaukee, Wis.

—Roofing Tile.  
Federal-American Cement Tile Co., Chicago.

CONDENSERS.  
Ingersoll-Rand Co., New York, N. Y.  
Manitowoc Iron Works Co., Manitowish, Mich.  
Westinghouse Electric & Mfg. Co., E.  
Pittsburgh, Pa.

CONDUITS (Electric, Interior,  
Steel.)  
Western Electric Co., New York, N. Y.  
Youngtown Sheet & Tube Co., Youngs-  
town, Ohio.

CONTRACTORS (Bridge.)  
Kansas City Bridge Co., Kansas City, Mo.  
Snare Corp., Frederick, New York.

—(Drainage and Dredging.)  
Arundel Corp., The, Baltimore, Md.  
Atlantic Gulf and Pacific Co., New York.

—(Electrical.)  
Walker Electrical Co., Atlanta, Ga.  
Warner Service Co., Knoxville, Tenn.  
Webb Electric Co., Anderson, S. C.

—(Foundations and Dams.)  
Snare Corp., Frederick, New York, N. Y.

—(General.)  
Angle-Blackford Co., Greensboro, N. C.  
Blair, Algonquin, Montgomery, Ala.  
Burkes, Inc., J. V. & E. T., New Orleans.  
Charleston Constructors, Inc., Charleston,  
S. C.

Cornell Young Co., Inc., Macon, Ga.  
Copper Co., Inc., John W., Richmond, Va.  
Fiske-Carter Constr. Co., Greenville, S. C.  
Gridley Constr. Co., Lee A., Knoxville,  
Tenn.  
Saville, Inc., Allen J., Richmond, Va.

Smallman Construction Co., Birmingham.  
Snare Corp., Frederick, New York, N. Y.  
Thompson & Bros., T. C., Charlotte, N. C.  
Tucker & Laxton, Charlotte, N. C.  
White Engineering Corp., J. G., New York.

—(Industrial Buildings.)  
Angle-Blackford Co., Greensboro, N. C.  
Blair, Algernon, Montgomery, Ala.  
Copper Co., Inc., John W., Richmond, Va.  
Flake-Carter Constr. Co., Greenville, S. C.  
Smallman Construction Co., Birmingham.  
Snare Corp., Frederick, New York, N. Y.  
Thompson & Bros., T. C., Charlotte, N. C.  
Tucker & Laxton, Charlotte, N. C.  
White Engineering Corp., J. G., New York.

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Hornbuckle Contracting Co., Atlanta, Ga.

—(Plastering.)  
Jennings & Co., Floyd, Atlanta, Ga.

—(Power Piping.)  
Foe Piping & Heating Co., Greenville, S. C.

—(Power Plants.)  
Snare Corp., Frederick, New York, N. Y.

—(Railroad.)  
Cornell-Young Co., Inc., Macon, Ga.

—(Reinforced Concrete.)  
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Tucker & Laxton, Charlotte, N. C.

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Gridley Constr. Co., Lee A., Knoxville, Tenn.  
Hornbuckle Contracting Co., Atlanta, Ga.  
McCrory Co., J. B., Atlanta, Ga.

—(Sewerage and Waterworks.)  
Gridley Constr. Co., Lee A., Knoxville, Tenn.

Hardaway Contracting Co., Columbus, Ga.  
Hornbuckle Contracting Co., Atlanta, Ga.  
McCrory Co., The J. B., Atlanta, Ga.  
Snare Corp., Frederick, New York, N. Y.  
Tucker & Laxton, Charlotte, N. C.

—(Sprinkler System.)  
Foe Piping & Heating Co., Greenville, S. C.

—(Water-Works.)  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.

—Machinery and Supplies.  
(New.)

Bay City Shovels, Inc., Bay City, Mich.  
Erie Steel Construction Co., Erie, Pa.  
W-K-M Co., Inc., Houston, Texas.

—Machinery and Supplies.  
(Used.)

Guion, Harry P., New York, N. Y.  
Lima Excavator Sales Agency, Lima, Ohio.  
Marine Metal & Supply Co., New York.  
Phillips, Inc., Chester A., Chicago.  
Samlir Mch. & Equip. Co., Baltimore.

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Webster & Weller Mfg. Cos., Chicago.

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Continental Gin Co., Birmingham, Ala.  
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Diamond Chain & Mfg. Co., Indianapolis, Ind.

—(Shaft.)  
Wood's Sons Co., T. B., Chambersburg, Pa.

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National Equipment Co. (Insley, Koehring, Parsons), Milwaukee, Wis.

Northwest Engineering Co., Chicago, Ill.  
Ohio Power Shovel Co., Lima, Ohio.  
Thew Shovel Co., The, Lorain, Ohio.  
Whiting Corp., Harvey, Ill.

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Bedford Foundry & Machine Co., Bedford, Ind.  
Whiting Corp., Harvey, Ill.

—(Crawler.)

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Industrial Brownhoist Corp., Cleveland, O.  
Northwest Engineering Co., Chicago, Ill.  
Ohio Power Shovel Co., Lima, Ohio.  
Thew Shovel Co., The, Lorain, Ohio.

—(Crawling Tractor.)

Northwest Engineering Co., Chicago, Ill.  
Ohio Power Shovel Co., Lima, Ohio.  
Thew Shovel Co., The, Lorain, Ohio.

—(Electric Traveling.)

Bedford Foundry & Machine Co., Bedford, Ind.  
Erie Steel Construction Co., Erie, Pa.  
Harnischfeger Corp., Milwaukee, Wis.  
Milwaukee Elec. Crane & Hoist Corp., Milwaukee, Wis.  
Whiting Corp., Harvey, Ill.

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Northwest Engineering Co., Chicago, Ill.  
Ohio Power Shovel Co., Lima, Ohio.  
Thew Shovel Co., The, Lorain, Ohio.

—(Gasoline.)

Buckeye Traction Ditcher Co., Findlay, Ohio.  
Harnischfeger Corp., Milwaukee, Wis.  
Northwest Engineering Co., Chicago, Ill.  
Ohio Power Shovel Co., Lima, Ohio.  
Thew Shovel Co., The, Lorain, Ohio.

—(Jib.)

Whiting Corp., Harvey, Ill.

—(Locomotive.)

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Northwest Engineering Co., Chicago, Ill.  
Ohio Power Shovel Co., Lima, Ohio.  
Thew Shovel Co., The, Lorain, Ohio.

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Industrial Brownhoist Corp., Cleveland, O.  
Northwest Engineering Co., Chicago, Ill.  
Ohio Power Shovel Co., Lima, Ohio.  
Thew Shovel Co., The, Lorain, Ohio.  
Universal Crane Co., Lorain, Ohio.

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Carolina Wood Preserving Co., Charleston, S. C.

Delaware Wood Preserving Co., Phila.  
Eppinger & Russell Co., New York, N. Y.  
Gulf States Creos. Co., Hattiesburg, Miss.  
Savannah Creosoting Co., Savannah, Ga.  
Wales Wood-Preserving Co., Norfolk, Va.

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Savannah Creosoting Co., Savannah, Ga.

—(Zinc Meta Arsenite Treated.)

Curtin-Howe Corp., New York, N. Y.

#### CROSS-TIES (Creosoted.)

Amer. Creosote Wks., Inc., New Orleans.  
Amer. Creosoting Co., Inc., Louisville, Ky.  
Ayer & Lord Tie Co., Inc., Chicago.  
Carolina Wood Preserving Co., Charleston, S. C.

Eppinger & Russell Co., New York, N. Y.  
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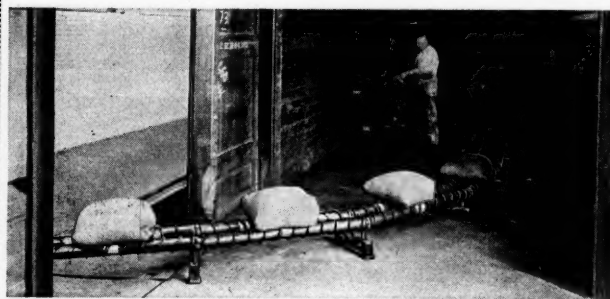
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Fay, Spofford & Thorndike, Boston, Mass.  
Freeland, Roberts & Co., Nashville, Tenn.  
Gardner & Howe, Memphis, Tenn.  
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Hardaway Contracting Co., Columbus, Ga.  
Hedrick, Inc., Ira G., Hot Springs, Nat'l Park, Ark.  
Howerton Engineering Co., Asheville, N. C.  
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Gardner & Howe, Memphis, Tenn.  
Greiner & Co., J. E., Baltimore, Md.  
Harub Engrs., C. N., Nashville, Tenn.  
Hedrick, Inc., Ira G., Hot Springs, Nat'l Park, Ark.  
Hills Co., George B., Jacksonville, Fla.  
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White Engineering Corp., J. G., New York.  
Whitman, Requaardt & Smith, Balto., Md.

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Airmap Corp. of Amer., Brooklyn, N. Y.  
Charlton & Davis, Ft. Lauderdale, Fla.  
Converse & Co., J. B., Mobile, Ala.  
Cramer, Robert, Milwaukee, Wis.  
Engineering Service Corp., Houston, Tex.  
Harza Engineering Co., Chicago.  
Hedrick, Inc., Ira G., Hot Springs, Nat'l Park, Ark.  
Herty, Charles H., New York City.  
Lockwood Greene Engrs., Inc., New York.  
Main, Inc., Chas. T., Boston, Mass.  
Smith, Elroy G., Augusta, Ga.  
Stillman & Van Sieten, New York, N. Y.  
Wadleigh & Bailey, Washington, D. C.  
White Engineering Corp., J. G., New York.  
Whitman, Requaardt & Smith, Balto., Md.  
Wiedeman & Singleton, Inc., Atlanta, Ga.

—(Dams.)  
Alpaugh & Sons, Chas. W., Manassas, Va.  
Battey & Kipp, Inc., Chicago, Ill.  
Byllesby Engineering and Management Corp., Chicago, Ill.  
Gardner & Howe, Memphis, Tenn.  
Hardaway Contracting Co., Columbus, Ga.  
Harza Engineering Co., Chicago.  
Hedrick, Inc., Ira G., Hot Springs, Nat'l Park, Ark.  
Lee, William S., Charlotte, N. C.  
Main, Inc., Chas. T., Boston, Mass.  
Sirrline & Co., J. E., Greenville, S. C.  
Tucker & Laxton, Charlotte, N. C.  
Wheeler, Walter H., Minneapolis, Minn.  
White Engineering Corp., J. G., New York.

—(Drainage and Irrigation.)  
Cramer, Robert, Milwaukee, Wis.  
Ford, Bacon & Davis, Inc., New York.  
Fuller & McClintock, New York, N. Y.  
Hills Co., George B., Jacksonville, Fla.  
Huey, S. E., Monroe, La.

—(Efficiency.)  
Ernst & Ernst, New York, N. Y.  
Whitman, Requaardt & Smith, Balto., Md.

—(Electrical.)  
Battey & Kipp, Inc., Chicago, Ill.  
Engineering Service Corp., Houston, Tex.  
Hoosier Engineering Co., Chicago, Ill.  
Lee, William S., Charlotte, N. C.  
Lockwood Greene Engrs., Inc., New York.  
Main, Inc., Chas. T., Boston, Mass.  
Mullergren, Arthur L., Kansas City, Mo.  
Sanderson & Porter, New York, N. Y.  
Tucker & Laxton, Charlotte, N. C.  
Webb Electric Co., Anderson, S. C.  
White Co., Gilbert C., Durham, N. C.  
Wiley & Wilson, Lynchburg, Va.

—(Electric-Light and Power Plants.)  
Battey & Kipp, Inc., Chicago, Ill.  
Byllesby Engineering and Management Corp., Chicago, Ill.  
Cramer, Robert, Milwaukee, Wis.  
Ford, Bacon & Davis, Inc., New York.  
Lee, William S., Charlotte, N. C.  
Main, Inc., Chas. T., Boston, Mass.  
Mullergren, Arthur L., Kansas City, Mo.  
Sanderson & Porter, New York, N. Y.  
Scotfield Engineering Co., Phila., Pa.  
Tucker & Laxton, Charlotte, N. C.  
White Engineering Corp., J. G., New York.  
White Co., Gilbert C., Durham, N. C.

—(Flood Control.)  
Harza Engineering Co., Chicago.

—(Forest.)  
Lacey & Co., Jas. D., New York, N. Y.

—(Gas.)  
Byllesby Engineering and Management Corp., Chicago, Ill.  
Ford, Bacon & Davis, Inc., New York.  
Huey, S. E., Monroe, La.

—(Geological.)  
De Kalb, Courtenay, New York City.  
Froehling & Robertson, Richmond, Va.  
Wadleigh & Bailey, Washington, D. C.  
Withers, R. S., Jackson, Miss.

—(Harbor Improvements.)  
Billingsley, James W., New Orleans, La.  
Engineering Service Corp., Houston, Tex.  
Fay, Spofford & Thorndike, Boston, Mass.

—(Heating.)  
Battey & Kipp, Inc., Chicago, Ill.  
Wiley & Wilson, Lynchburg, Va.

—(Hydraulic.)  
Alpaugh & Sons, Chas. W., Manassas, Va.  
Fuller & McClintock, New York, N. Y.  
Harza Engineering Co., Chicago.  
Main, Inc., Chas. T., Boston, Mass.  
Whitman, Requaardt & Smith, Balto., Md.

—(Hydro-electric.)  
Alpaugh & Sons, Chas. W., Manassas, Va.  
Battey & Kipp, Inc., Chicago, Ill.  
Byllesby Engineering and Management Corp., Chicago, Ill.  
Harza Engineering Co., Chicago.  
Lee, William S., Charlotte, N. C.  
Main, Inc., Chas. T., Boston, Mass.  
Mees & Mees, Charlotte, N. C.  
Sanderson & Porter, New York, N. Y.  
Scotfield Engineering Co., Phila., Pa.  
Sirrline & Co., J. E., Greenville, S. C.  
Tucker & Laxton, Charlotte, N. C.  
White Engineering Corp., J. G., New York.  
Whitman, Requaardt & Smith, Balto., Md.

—(Ice and Refrigerating.)  
Engineering Service Corp., Houston, Tex.

—(Industrial Plants.)  
Ballinger Co., Philadelphia, Pa.  
Battey & Kipp, Inc., Chicago, Ill.  
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Charleston Constructors, Inc., Charleston, S. C.  
Consoer, Older & Quinlan, Inc., Chicago.  
Converse & Co., J. B., Mobile, Ala.  
Fay, Spofford & Thorndike, Boston, Mass.  
Gardner & Howe, Memphis, Tenn.  
Greiner & Co., J. E., Baltimore, Md.  
Herty, Charles H., New York City.  
Hills Co., George B., Jacksonville, Fla.  
International Derrick & Equipment Co., Columbus, Ohio.  
Lockwood Greene Engrs., Inc., New York.  
MacElwee & Crandall, Inc., Cambridge, Mass.  
Main, Inc., Chas. T., Boston, Mass.  
Mees & Mees, Charlotte, N. C.  
Mullergren, Arthur L., Kansas City, Mo.  
Preacher & Co., Inc., G. Lloyd, Atlanta.  
Sanderson & Porter, New York, N. Y.  
Scotfield Engineering Co., Phila., Pa.  
Sirrline & Co., J. E., Greenville, S. C.  
Smith, Elroy G., Augusta, Ga.  
Turner, C. A. P., Minneapolis, Minn.  
Widmer Engineering Co., St. Louis, Mo.

—(Industrial Survey.)  
Converse & Co., J. B., Mobile, Ala.  
Herty, Charles H., New York City.  
Lockwood Greene Engrs., Inc., New York.  
Wadleigh & Bailey, Washington, D. C.

—(Inspection and Tests.)  
Barrow-Agee Laboratories, Memphis, Tenn.  
Conard, William B., Burlington, N. J.  
Cramer, Robert, Milwaukee, Wis.  
Dow & Smith, New York, N. Y.  
Flood & Co. Walter H., Chicago, Ill.  
Froehling & Robertson, Inc., Richmond, Va.  
Hunt Co., Robert W., Chicago, Ill.  
Pittsburgh Testing Laboratories, Pittsburgh, Pa.  
Southwestern Laboratories, Ft. Worth, Tex.

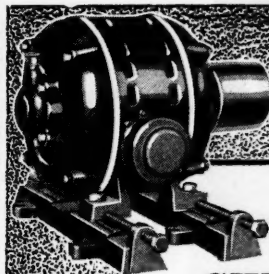
—(Landscapes.)  
Draper, E. S., Charlotte, N. C.

—(Lighting.)  
Battey & Kipp, Inc., Chicago, Ill.  
Byllesby Engineering and Management Corp., Chicago, Ill.  
Ford, Bacon & Davis, Inc., New York.  
General Electric Vapor Lamp Co., Hoboken, N. J.  
Wiley & Wilson, Lynchburg, Va.

—(Mechanical.)  
Battey & Kipp, Inc., Chicago, Ill.  
Charlton & Davis, Ft. Lauderdale, Fla.  
Engineering Service Corp., Houston, Tex.  
Lee, William S., Charlotte, N. C.  
Lockwood Greene Engrs., Inc., New York.  
Main, Inc., Chas. T., Boston, Mass.  
Mees & Mees, Charlotte, N. C.  
Mels, Bassett & Slaughter, Phila., Pa.  
Sanderson & Porter, New York, N. Y.  
Wiley & Wilson, Lynchburg, Va.

—(Mining. See Engineers, Geological.)

—(Municipal.)  
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Knowles, Inc., Morris, Pittsburgh, Pa.  
McCrary Co., The, J. B., Atlanta, Ga.  
Spoon & Lewis, Greensboro, N. C.  
White Co., Gilbert C., Durham, N. C.

### —(Paving and Roads.)

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Dow & Smith, New York, N. Y.  
Freeland, Roberts & Co., Nashville, Tenn.  
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Sanderson & Porter, New York, N. Y.  
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White Engineering Corp., J. G., New York.

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Moss & Moss, Charlotte, N. C.

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Freeland, Roberts & Co., Nashville, Tenn.  
Gardner & Howe, Memphis, Tenn.  
Greiner & Co., J. E., Baltimore, Md.  
Lockwood Greene Engrs., Inc., New York.  
Main, Inc., Chas. T., Boston, Mass.  
Steel & Lacey, Knoxville, Tenn.  
Tucker & Laxton, Charlotte, N. C.  
Turner, C. A. P., Minneapolis, Minn.  
Wheeler, Walter H., Minneapolis, Minn.

### —(Sanitary.)

Cramer, Robert, Milwaukee, Wis.  
Harza Engineering Co., Chicago.  
Whitman, Requaardt & Smith, Balto., Md.

### —(Sewage Disposal Plants.)

Cramer, Robert, Milwaukee, Wis.  
Fuller & McClintock, New York, N. Y.  
McCrary Co., The, J. B., Atlanta, Ga.  
Whitman, Requaardt & Smith, Balto., Md.  
Wiedeman and Singleton, Inc., Atlanta.

### —(Sewerage and Waterworks.)

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Conover, Older & Guinlan, Inc., Chicago.  
Ford, Bacon & Davis, Inc., New York.  
Fuller & McClintock, New York, N. Y.  
Hardaway Contracting Co., Columbus, Ga.  
Harrub Engr. Co., C. N., Nashville, Tenn.  
Hills Co., George B., Jacksonville, Fla.  
Howerton Engineering Co., Asheville, N.C.  
Knowles, Inc., Morris, Pittsburgh, Pa.  
Moss & Moss, Charlotte, N. C.  
Sanderson & Porter, New York, N. Y.  
Spoon & Lewis, Greensboro, N. C.  
Tucker & Laxton, Charlotte, N. C.  
White Co., Gilbert C., Durham, N. C.  
White Engineering Corp., J. G., New York.  
Whitman, Requaardt & Smith, Balto., Md.  
Wiedeman & Singleton, Inc., Atlanta, Ga.

### —(Structural.)

Freeland, Roberts & Co., Nashville, Tenn.  
Hedrick, Inc., Ira G., Hot Springs Nat'l Park, Ark.  
Hills Company, Geo. B., Jacksonville, Fla.  
Huey, S. E., Monroe, La.  
Lockwood Greene Engrs., Inc., New York.  
Turner, C. A. P., Minneapolis, Minn.  
Virginia Bridge & Iron Co., Roanoke, Va.  
Whitman, Requaardt & Smith, Balto., Md.

### —(Textile Mills.)

Ballinger Co., Philadelphia, Pa.  
Lockwood Greene, Engrs., Inc., New York.  
Main, Inc., Chas. T., Boston, Mass.  
Svirine & Co., J. E., Greenville, S. C.

### —(Transmission Lines.)

Hosler Engineering Co., Chicago, Ill.

### —(Ventilating and Heating.)

Wiley & Wilson, Lynchburg, Va.

### —(Water Supply.)

Whitman, Requaardt & Smith, Balto., Md.

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Dake Engine Co., Grand Haven, Mich.

### —(Diesel Type.)

Fairbanks, Morse & Co., Chicago, Ill.

### —(Gas and Gasoline.)

Novo Engine Co., Lansing, Mich.  
Sterling Engine Co., Buffalo, N. Y.

### —(Hoisting.)

Clyde Iron Works Sales Co., Duluth, Minn.

### —(Marine.)

Fairbanks, Morse & Co., Chicago, Ill.

### —(Oil.)

Ingersoll-Rand Co., New York, N. Y.  
Continental Gin Co., Birmingham, Ala.

### —(Steam.)

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Cole Mfg. Co., B. D., Newnan, Ga.  
Leffel & Co., James, Springfield, O.

Lombard Iron Works & Supply Co., Augusta, Ga.  
Schofield's Sons Co., J. S., Macon, Ga.

### ENVELOPES.

Young & Seldon Co., Baltimore, Md.

### ESTIMATORS (Building & Construction.)

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Spring, Charles Herbert, Greensboro, N.C.

### EXCAVATING MACHINERY.

Bay City Shovels, Inc., Bay City, Mich.  
Bucyrus-Erie Co., Erie, Penna.  
Clyde Iron Works Sales Co., Duluth, Minn.  
Harnischfeger Corp., Milwaukee, Wis.  
Hayward Co., The, New York, N. Y.  
Industrial Brownholt Corp., Cleveland.  
Monaghan Mfg. Corp., Chicago, Ill.  
National Equipment Corp. (Kochring, Insley, Parsons), Milwaukee, Wis.  
Northwest Engineering Co., Chicago, Ill.  
Owen Bucket Co., The, Cleveland, Ohio.  
Thew Shovel Co., The, Lorain, Ohio.  
Universal Power Shovel Co., Milwaukee, Wis.

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Ohio Power Shovel Co., Lima, Ohio.  
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### —(Dragline. See Dragline Excavators.)

### —(Trench.)

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Bay City Shovels, Inc., Bay City, Mich.  
Buckeye Traction Ditcher Co., Findlay, Ohio.  
Bucyrus-Erie Co., Erie, Penna.  
Harnischfeger Corp., Milwaukee, Wis.  
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### EXPANSION JOINTS (Road and Street.)

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Servicised Products Corp., Chicago, Ill.

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 Tenn. Metal Culvert Co., Nashville, Tenn.  
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 DeLaval Steam Turbine Co., Trenton, N. J.  
 Earle Gear & Machine Co., Phila., Pa.  
 General Electric Co., Schenectady, N. Y.  
 Woods' Sons Co., T. B., Chambersburg, Pa.

**—(Worm Reduction.)**

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 Howell Electric Motors Co., Howell, Mich.  
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 O'Brien Machinery Co., Phila., Pa.  
 Randle Machinery Co., The, Cincinnati, O.

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Geological.)

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**—(Plate.)**

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 Hires Turner Glass Co., Philadelphia, Pa.  
 Southwestern Sheet Glass Co., Okmulgee, Okla.

**—(Window.)**

Blue Ridge Glass Corp., Kingsport, Tenn.  
 Hires Turner Glass Co., Philadelphia, Pa.  
 Southwestern Sheet Glass Co., Okmulgee, Okla.

**—(Wire.)**

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 Hires Turner Glass Co., Philadelphia, Pa.  
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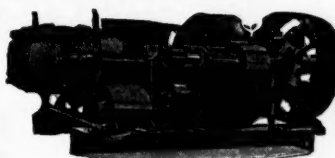
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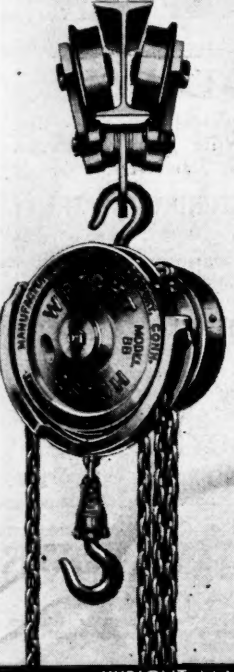
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National Tube Co., Pittsburgh, Pa.

### —(Yellow Pine.)

Jackson Lumber Co., Lockhart, Ala.

—(Zinc Meta Arsenite Treated.)  
Curtin-Howe Corp., New York City.

### POLISHING MACHINERY.

—(Wheels, Blocks.)  
Carborundum Co., Niagara Falls, N. Y.

### POSTS, (Cast Iron, Railway and Highway.)

U. S. Pipe & Foundry Co., Burlington, N. J.

### POWER TRANSMISSION MACHINERY.

American Pulley Co., Philadelphia, Pa.  
Diamond Chain & Mfg. Co., Indianapolis.  
Goldens' Fdry. & Mch. Co., Columbus, Ga.  
O'Brien Machinery Co., Phila., Pa.  
Schmidt's Sons Co., J. S., Macon, Ga.  
Wood's Sons Co., T. B., Chambersburg, Pa.

### —(Pumps.)

Luitwiler Pumping Engine Co., Rochester, N. Y.

### PREHEATERS (Air.)

Combustion Engr. Corp., New York City.

### PRESSES, (Baling, Cottonseed Oil, Hydraulic and Power.)

Dunning & Boschert Press Co., Inc., Syracuse, N. Y.  
Ripley Foundry & Machine Co., Ripley, O.  
Tomlin-Harris Machine Co., Cordoba, Ga.

### —(Metal Stamping.)

Bliss Co., E. W., Brooklyn, N. Y.

### PRINTERS (Book, Catalog, Job.)

Smith & Sen Co., Oscar T., Baltimore, Md.  
Young & Selken Co., Baltimore, Md.

**PRODUCER (Gas Machines.)**  
Gas-O-Flame Stove Wks., Fort Deposit, Md.  
Wood & Co., E. D., Phila., Pa.

**PULLEYS (Friction Clutch.)**  
Caldwell Co., Inc., W. E., Louisville, Ky.  
Wood's Sons Co., T. B., Chambersburg, Pa.

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American Pulley Co., Philadelphia, Pa.

—(Steel Split.)  
American Pulley Co., Philadelphia, Pa.

—(Shafting and Hangers.)  
American Pulley Co., Philadelphia, Pa.  
Goldens' Fdy. & Mch. Co., Columbus, Ga.  
Wood's Sons Co., T. B., Chambersburg, Pa.

**PULVERIZED COAL EQUIPMENT.**  
Combustion Engr. Corp., New York, N. Y.  
Fuller Lehigh Co., Fullerton, Pa.  
Whiting Corp., Harvey, Ill.

**PULVERIZERS (See Crushing and Pulverizing Machinery.)**

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(Ingersoll-Rand Co.), New York City.  
Chas. Belt Co., Milwaukee, Wis.  
Cook, Inc., A. D., Lawrenceburg, Ind.  
Fairbanks, Morse & Co., Chicago, Ill.  
Ingersoll-Rand Co. (A. S. Cameron Steam Pump Works), New York, N. Y.  
International Derrick & Equipment Co., Columbus, Ohio.  
Luitwiler Pumping Engine Co., Rochester, N. Y.  
Myers & Bro. Co., The F. E., Ashland, O.  
National Equipment Corp., (C. H. & E. Division), Milwaukee, Wis.  
Viking Pump Co., Cedar Falls, Iowa.  
Virginia Mch. & Wll Co., Richmond, Va.

**PUMPS (Air.)**  
Manistee Iron Works Co., Manistee, Mich.

—(Air Lift.)  
Ingersoll-Rand Co., New York, N. Y.  
Sullivan Machinery Co., Chicago, Ill.

—(Boiler Feed.)  
Cameron, A. S., Steam Pump Works  
(Ingersoll-Rand Co.), New York City.  
DeLaval Steam Turbine Co., Trenton, N. J.  
Erie Pump & Engine Wks., Medina, N. Y.  
Ingersoll-Rand Co. (A. S. Cameron Steam Pump Works), New York, N. Y.  
Manistee Iron Works Co., Manistee, Mich.  
Myers & Bro. Co., The F. E., Ashland, O.

—(Centrifugal.)  
Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Cameron, A. S., Steam Pump Works  
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DeLaval Steam Turbine Co., Trenton, N. J.  
Erie Pump & Engine Wks., Medina, N. Y.  
Fairbanks, Morse & Co., Chicago, Ill.  
Ingersoll-Rand Co. (A. S. Cameron Steam Pump Works), New York, N. Y.  
Jaeger Machine Co., Columbus, Ohio.  
La Bour Co., Elkhart, Ind.  
Layne & Bowler Inc., Memphis, Tenn.  
Manistee Iron Works Co., Manistee, Mich.  
Novo Engine Co., Lansing, Mich.

—(Contractors.)  
Erie Pump & Engine Wks., Medina, N. Y.  
Novo Engine Co., Lansing, Mich.

—(Deep Well.)  
Cook, Inc., A. D., Lawrenceburg, Ind.  
Layne & Bowler Inc., Memphis, Tenn.  
Luitwiler Pumping Engine Co., Rochester, N. Y.  
Novo Engine Co., Lansing, Mich.

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Novo Engine Co., Lansing, Mich.

—(Hydraulic.)  
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—(Power.)  
Sterling Engine Co., Buffalo, N. Y.

—(Pulverized Coal.)  
Fuller Lehigh Co., Fullerton, Pa.

—(Rotary.)  
Viking Pump Co., Cedar Falls, Iowa.

—(Sand and Dredging.)  
Ellisot Machine Corp., Baltimore, Md.  
Erie Pump & Engine Wks., Medina, N. Y.  
Georgia Iron Works, Augusta, Ga.

—(Steam.)  
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Fairbanks, Morse & Co., Chicago, Ill.  
Ingersoll-Rand Co. (A. S. Cameron Steam Works), New York, N. Y.

—(Vacuum.)  
Ingersoll-Rand Co., New York, N. Y.  
Sullivan Machinery Co., Chicago, Ill.

—(Water Works.)  
Layne & Bowler Inc., Memphis, Tenn.  
Manistee Iron Works Co., Manistee, Mich.

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Whitney Metal Tool Co., Rockford, Ill.

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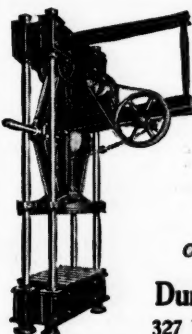
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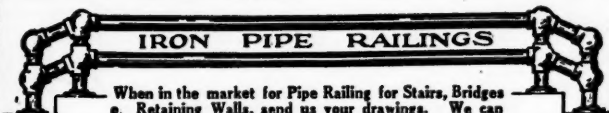
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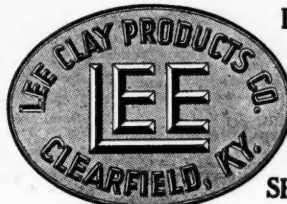
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Galveston, City of, Galveston, Texas.  
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Jacksonville, City of, Jacksonville, Fla.  
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Erie Steel Construction Co., Erie, Pa.

Ingalls Iron Works Co., Birmingham, Ala.  
International Derrick & Equipment Co., Columbus, Ohio.

McClintic-Marshall Co., Pittsburgh, Pa.  
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Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.  
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Central Iron & Steel Co., Harrisburg, Pa.

Chattanooga Boiler & Tank Co., Chattanooga, Tenn.

Chicago Bridge & Iron Works, Atlanta, Ga.  
Combustion Engr. Corp., New York City.

Hammond Iron Works, Warren, Pa.  
Hedges Walsh Weldner Co., Chattanooga, Tenn.

Ingalls Iron Works Co., Birmingham, Ala.  
Phoenix Iron Co., The, Phila., Pa.

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Chattanooga Boiler & Tank Co., Chattanooga, Tenn.

Converse Bridge & Steel Co., Chattanooga, Tenn.

Dietrich Brothers, Baltimore, Md.  
Eichley Jr. Co., John, Pittsburgh.

Erie Steel Constr. Co., Erie, Pa.  
Ingalls Iron Works Co., Birmingham, Ala.

McClintic-Marshall Co., Pittsburgh, Pa.  
Nashville Bridge Co., Nashville, Tenn.

Phoenix Iron Co., The, Phila., Pa.  
Pittsburgh-Des Moines Steel Co., Pittsburgh, Pa.

Republic Steel Corp., Youngstown, Ohio.  
Roanoke Iron & Bridge Works, Inc., Roanoke, Va.

Ryerson & Son, Inc., Jos. T., St. Louis and New York.

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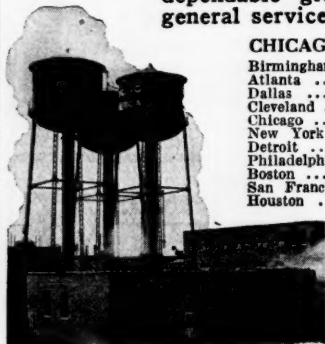
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Chicago Bridge & Iron Wks., Atlanta, Ga.  
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Cleveland Tractor Co., Cleveland, Ohio.  
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Inc., Chicago, Ill.

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Cleveland Tractor Co., Cleveland, Ohio.

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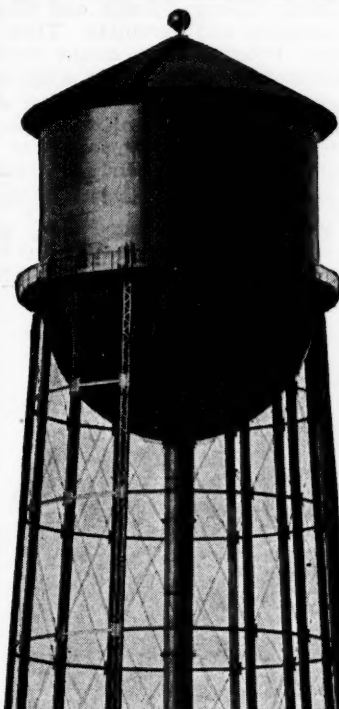
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Seneca Wire & Mfg. Co., Fostoria, Ohio.**WOOD (Preserved.)**  
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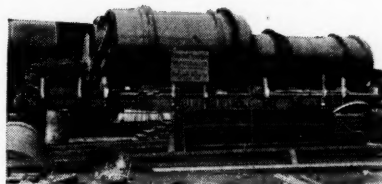
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AND  
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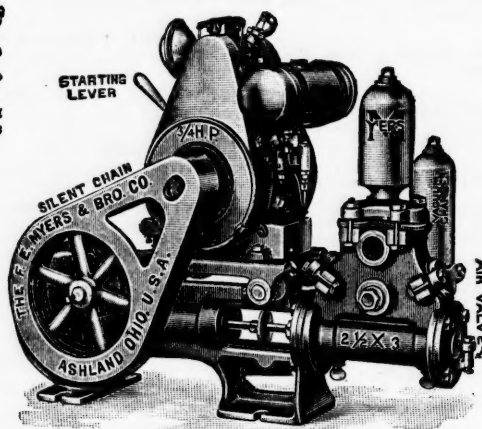
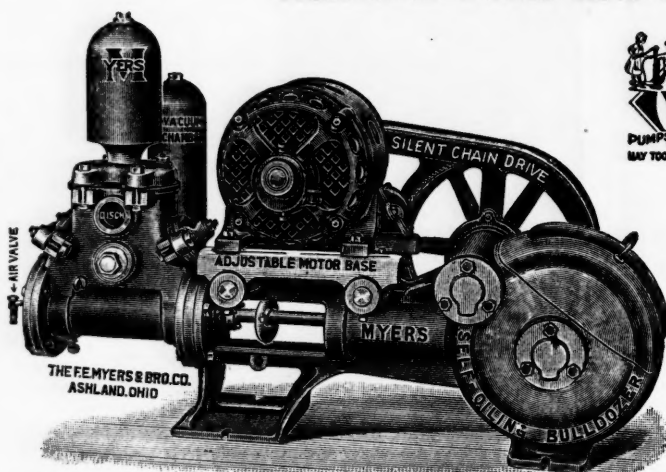
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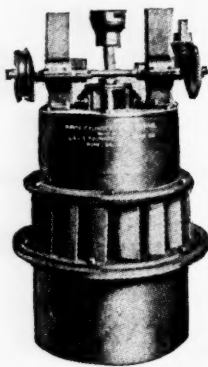
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**PUMPS—WATER SYSTEMS—HAY TOOLS—DOOR HANGERS**



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 154 Glenwood Ave. Medina, N. Y.

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## News of 1931

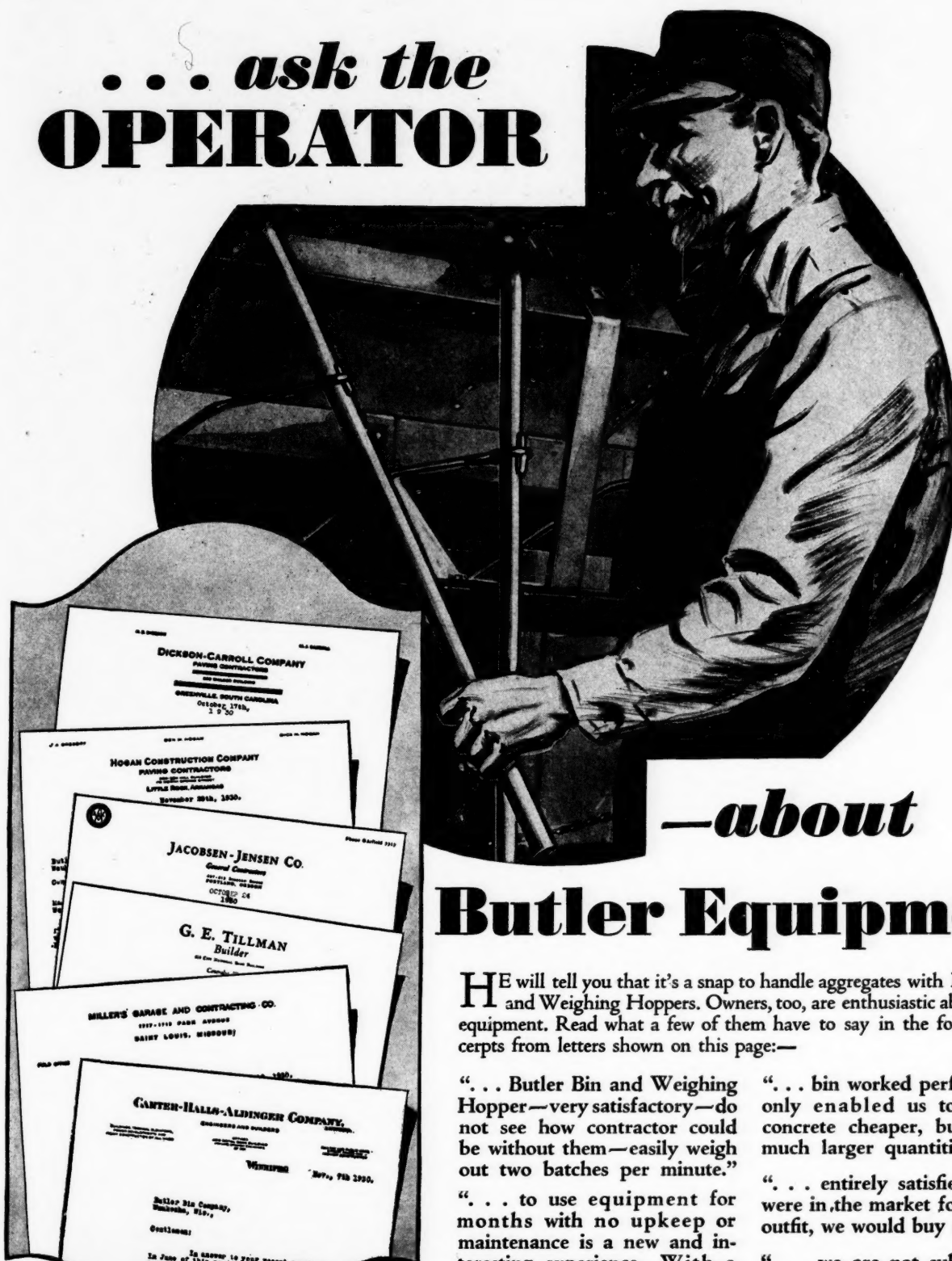
## Highway Improvements in the South!

ADVANCE reports indicate that in 1931 there will be a total of \$600,000,000 expended in the South on highway improvements—an increase of ten per cent over 1930. Bond issues are now under consideration in several Southern states, which, if passed, will add appreciably to this figure. It is estimated that \$300,000,000 will be expended on road systems alone. The remaining \$300,000,000 will be used for county and district road extension and street paving by municipalities.

Here are sales opportunities of real value. This work in each step of its progress may be followed accurately and completely in the daily issues of

## The Daily Construction Bulletin

... ask the  
**OPERATOR**



—about

## Butler Equipment

HE will tell you that it's a snap to handle aggregates with Butler Bins and Weighing Hoppers. Owners, too, are enthusiastic about Butler equipment. Read what a few of them have to say in the following excerpts from letters shown on this page:—

"... Butler Bin and Weighing Hopper—very satisfactory—do not see how contractor could be without them—easily weigh out two batches per minute."

"... to use equipment for months with no upkeep or maintenance is a new and interesting experience. With a single operator we weigh two batches per minute—more than twice the speed required."

"... bin worked perfectly; not only enabled us to produce concrete cheaper, but to mix much larger quantities."

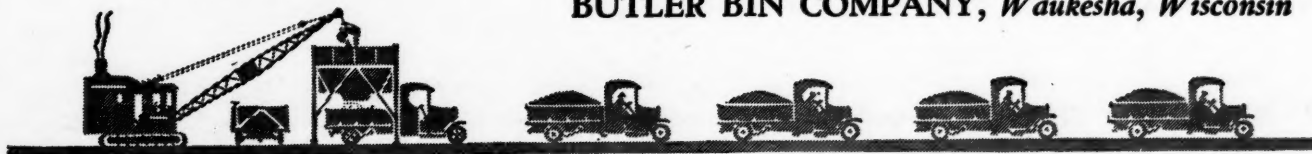
"... entirely satisfied. If we were in the market for another outfit, we would buy a Butler."

"... we are not subjected to shutdowns on account of scales varying, as they stay in perfect balance."

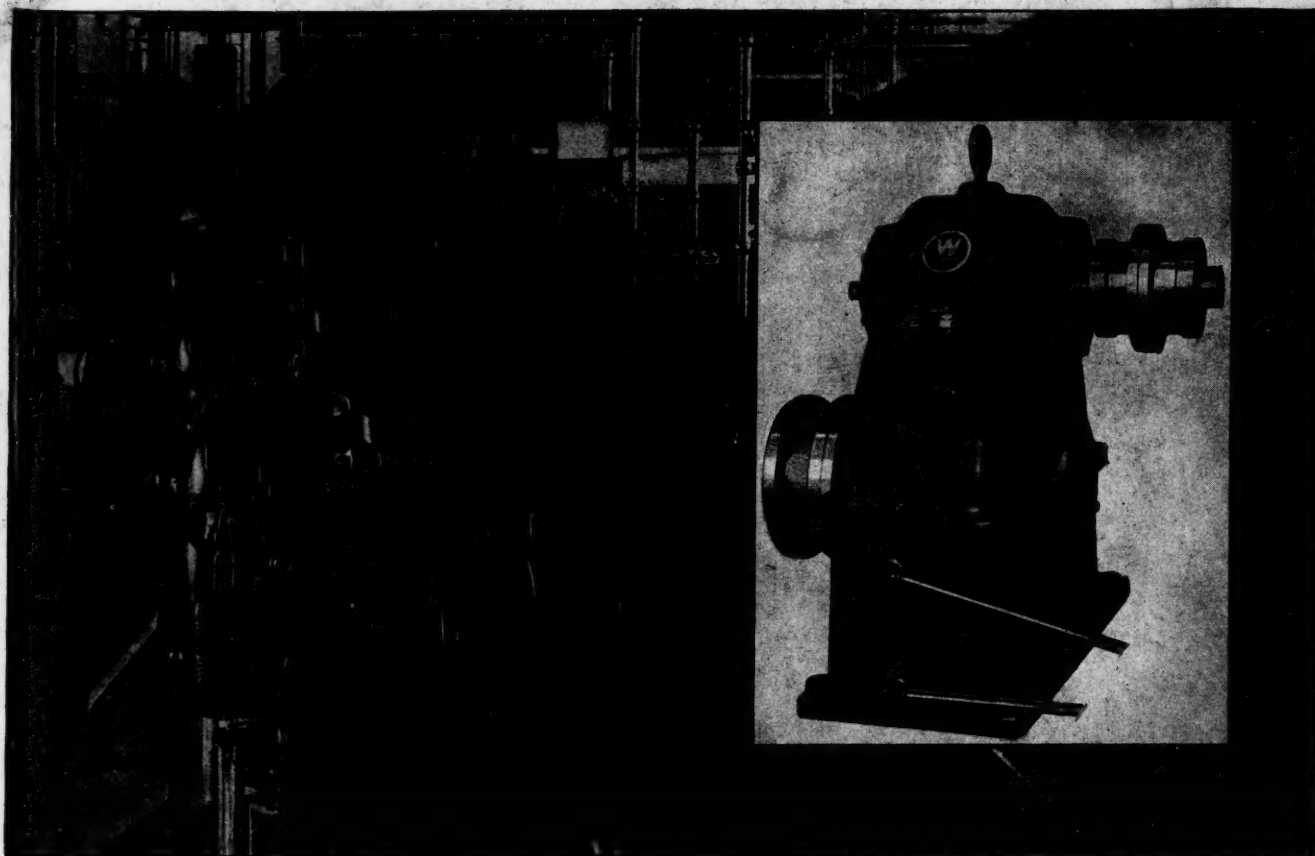
If the experience of these satisfied users interests you, we will be glad to tell you more about it at the Road Show—Booth AR-16.

BUTLER BIN COMPANY, Waukesha, Wisconsin

**BUTLER**  
Steel **BINS**  
and **HOPPERS**







## These Timken Bearings Have Run 70 Times the Life of the Average Automobile

The pinion bearings in the 6 Westinghouse-Nuttall gear reduction units at the Washington Pulp and Paper Company have each rolled up the enormous total of over 2,338,000,000 revolutions, and a recent check-up shows that they are good for many millions more.

Loaded 100% of their Timken catalogue rating, they have averaged  $6\frac{1}{4}$  days per week, 24 hours a day since they were installed in April, 1923.

The total distance traveled by each of these bearings is the equivalent of driving an automobile more than 3,500,000 miles, whereas the average automobile travels but 50,000 miles during its entire life.

A worthy tribute to Timken stamina! Don't you want this same unequalled endurance in every piece of machinery you use? The Timken Roller Bearing Company, Canton, Ohio.

# **TIMKEN** *Tapered Roller* **BEARINGS**

